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A Multiple Case Study Analysis of the Positive Deviance Approach in Community Health

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COLLEGE OF HEALTH SCIENCES

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Abstract

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B.Sc. (Hons), University of New South Wales, 2005

Dissertation Submitted in Fulfillment

of the Requirements for the Degree of

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Abstract

The positive deviance (PD) approach involves finding individuals who have solved a problem and spreads their unique solutions to others. While there have been calls for PD to become a standard tool in community health, there has been little research on the approach. This study investigated how PD is used in practice and evidence of its effectiveness by analyzing case studies of 40 PD programs and 32 PD inquiries implemented in a range of high, middle, and low income countries by both national and international organizations. Case studies were developed using data from publicly available documents. Qualitative within-case and cross-case analyses were used to identify common themes and trends using the theory of diffusion of innovations. Results show that the first large scale applications of the PD approach were in child malnutrition in the 1990s. Since then the approach has been applied to other issues in individual behavior change (e.g., HIV/AIDS), organizational change (e.g., health services), and sociocultural change (e.g., female genital mutilation). Current PD approaches can be classified by the level of intervention, and the methods used to identify positive deviants, discover their behaviors, and spread the behaviors to others. Most programs do not fully involve the community at all stages. While there is substantial evidence for the effectiveness of the PD approach in child malnutrition, few high quality outcome evaluations have been conducted in other areas. Implications for positive social change include providing data to encourage practitioners to use the PD approach as a standard tool for child malnutrition, where it has the potential to improve nutritional status and thus contribute to long term outcomes in child health, education and social development.

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Chapter 1: Introduction to the Study

Background of the Study

Positive deviance (PD) is the concept that "in every community or organization, there are a few individuals who have found uncommon practices and behaviors that enable them to achieve better solutions to problems than their neighbors who face the same challenges and barriers" (Pascale, Sternin, & Sternin, 2010, p. 206). The PD approach aims to solve community problems by focusing on positive deviance within the community, rather than by focusing on the community's needs. The approach seeks out "positive deviants" in the community and uses their existing solutions to bring about sustainable behavioral and social change. (Pascale et al., 2010, p. 206). It is important to note that in popular culture the word "deviant" usually has negative connotations and is applied to people, such as criminals and psychopaths, who deviate from the social norms in a negative way. In the context of this work, however, a positive deviant refers to an individual who deviates from the social norms in a positive way (Babalola, Ouedraogo, & Vondrasek, 2006). Thus, the term is intended to have positive connotations.

The concept of PD entered the community health field in the 1970s in the field of child nutrition. Wishik and Van Der Vynckt (1976) were among the first researchers to suggest that the PD approach could be used to find solutions to childhood malnutrition by identifying mothers whose children were well nourished, despite living in poverty. The aim was to find out what the mothers of these children were doing that allowed their children to be well nourished, for example, feeding them special foods. Community health practitioners could then incorporate these behaviors into a nutrition program, knowing that the behaviors were both affordable and culturally acceptable because they

were already being practiced by members of the community. The term positive deviance was first used to describe this approach by Marian Zeitlin, as part of her pioneering work in the 1990s documenting positive deviance in child nutrition (Zeitlin, Ghassemi, & Mansour, 1990). Since then, the PD approach has been used to find solutions to child malnutrition in many countries (Bolles, Speraw, Berggren, & Lafontant, 2002; Dearden, Quan, Do, Marsh, Pachón et al., 2002; Guldan et al., 1993; Lapping, Schroeder, Marsh, Albalak, & Zahir Jabarkhil, 2002; Levinson, Barney, Bassett, & Schultink, 2007; Sethi, Kashyap, Aggarwal, Pandey, & Kondal, 2007; Sethi, Kashyap, Seth, & Agarwal, 2003). The PD approach has also been applied to other issues, such as nurse-patient communication in Indonesia (Kim, Heerey, & Kols, 2008), smoking cessation in Australian prisons (Awofeso, Irwin, & Forrest, 2008), and Methicillin-resistant Staphylococcus aureus (MRSA) prevention in U.S. hospitals (Singhal & Greiner, 2007). Examples of innovative solutions practiced by positive deviants include mothers feeding children shrimp in Vietnam to prevent malnutrition (Sternin, 2002), an orderly sealing an MRSA exposed gown inside a glove to prevent transmission in a hospital (Gertner, 2008), and an HIV-negative sex worker telling clients she "has the disease" if they refuse to use a condom, which scares them so much they agree to wear it (Positive Deviance Initiative, 2010d).

The PD approach has been incorporated into PD informed programs that aim to identify and promote PD behaviors. A small number of these programs have been evaluated, with some showing very positive results. For example, a PD informed program in Vietnam evaluated by Marsh et al. (2004) resulted in a 74% reduction in child malnutrition, that was maintained 3-4 years after the end of the program (Trinh

Mackintosh et al., 2002). This program in Vietnam was the first PD program run by Jerry Sternin and Monique Sternin, both of whom have been active in promoting the PD approach and set up the Positive Deviance Initiative at Tufts University. Jerry Sternin was a visiting scholar at Tufts University for many years prior to his death, and Monique Sternin is now a Senior Consultant to the Positive Deviance Initiative, which collaborates with a range of organizations including UNICEF, Peace Corps, USAID, and the World Bank to promote PD (Positive Deviance Initiative, 2010e). Their recent book, "The Power of Positive Deviance," describes several of the PD programs they have worked on and provides guidelines for practitioners wanting to use their PD approach (Pascale et al., 2010).

Another area where the PD approach has been applied and evaluated is the prevention of MRSA transmission in U.S. hospitals (Singhal & Greiner, 2007). The use of PD in this field was also initiated by Jerry Sternin (Pascale et al., 2010) and has continued after his death in 2008. In these programs the PD approach has been used to identify staff members within hospitals who practice behaviors that prevent MRSA transmission. In one hospital MRSA infections declined 55% when a PD initiative was implemented that required no extra resources; this rate was compared to a 35% reduction after using an external quality management system that was unsustainable in the long term because it required large funding (Singhal & Greiner, 2007).

Although examples of PD programs have been highly successful and it has been used in practice, there has been little scientific research into the PD approach itself. For example, there has been no study into the wide variation of PD approaches currently in use, the characteristics of programs using the PD approach, or the effectiveness of the PD

approach in a range of different contexts.

The PD approach is an "assets based" approach, similar to appreciative inquiry and assets based community development (ABCD; ACCESS, 2009), but more specific in relating community resources or ideas to a predefined problem. Proponents of the PD approach consider it more effective than typical "needs based" approaches for difficult, ingrained problems because it identifies existing solutions from within the community, which means that the solutions are more likely to be affordable, acceptable, and sustainable in the long term (Marsh & Schroeder, 2002; Sternin, 2002; Trinh Mackintosh et al., 2002). These full or partial solutions can also be implemented immediately, without waiting for all underlying determinants of the problem to be addressed (Sternin, 2002). For example, in the case of the sex worker confronted by a client who refuses to wear a condom, there are many underlying determinants that contribute to the problem, including issues of gender equity, lack of alternative employment for women, and poor regulation of the sex industry. Addressing these underlying determinants will take decades of advocacy and long term programming to have a real effect on the life of the sex worker. In the meantime, the sex worker still has a need to protect herself. To do this she can use the positive deviant behavior described previously to tell her clients she "has the disease" if they refuse to use a condom. This tactic does not require the underlying determinants of the problem to be addressed, and can be implemented immediately.

Anecdotal evidence from studies that use the PD approach also suggests that using a PD approach can lead to intangible benefits, such as community mobilization (Marsh et al, 2004; Save the Children, n.d.; Singhal & Greiner, 2007), reduced aid dependency (Milton & Ochieng, 2007; Schooley & Morales, 2007), community

empowerment (Hendrickson et al., 2002; Schooley & Morales, 2007), and improved advocacy (Awofeso et al., 2008; Lapping, Marsh et al., 2002; Sternin, 2002), among others. However, there has only been one study that rigorously evaluated these intangible benefits (Hendrickson et al., 2002), and more research is needed to fully understand these reported effects (Marsh et al, 2004; Schooley & Morales, 2007).

While the PD approach appears to have many benefits, it also has limitations. By definition, solutions found through the PD approach can be implemented immediately with existing resources (Sternin, 2002). As a result, they do not usually address the underlying causes of the problem, which requires a long term strategy. They are also highly context specific and cannot be transferred to other communities or even between different seasons of the year (Berggren & Wray, 2002). The Positive Deviance Initiative (2009) defined several criteria that can be used to determine whether a PD approach is suitable for the problem being addressed. Those criteria include the following: (a) The problem is not exclusively technical and requires behavioral or/and social change; (b) the problem is "intractable"—that is, other solutions have not worked; (c) positive deviants exist—that is, solutions are possible; and, (d) there is leadership commitment to address the issue or, in other words, PD champions exist. Devane (2009) also identified a range of situations when the PD approach is not suitable, includes situations in which (a) the problem is primarily technical and requires minimal behavior change; (b) complex analysis, data collection, or truly special skills are required to determine proper behaviors and next steps; or, (c) there is little agreement about what needs to be done and/or there is a low certainty of a reliable outcome.

Authors have presented different versions of the steps required to implement the

PD approach (Bradley et al., 2009; Devane, 2009; Marsh et al, 2004; Marsh, Sternin et al., 2002; Positive Deviance Initiative, 2009; Save the Children, n.d.; Schooley & Morales, 2007; Walker et al., 2007), although most include variations on the "four Ds" presented by Pascale et al.(2010): (a) Define the problem and desired outcome, (b) determine common practices, (c) discover uncommon but successful behaviors and strategies through inquiry and observation, and (d) design an action learning initiative based on the findings (p. 202). Action learning initiatives typically involve community members learning the new behaviors by practicing them during group education sessions. According to Pascale et al (2010), the most critical part of the PD approach is that the community must own the entire process from start to finish. The PD approach should be highly participatory in nature, and the experts should remain as facilitators only, allowing the community to decide on the problem to be solved and to discover and disseminate the PD behaviors themselves (Pascale et al., 2010). However, not all studies that used a PD approach have been participatory, so the question remains as to whether the PD approach is actually participatory by definition.

Variation in PD approaches

A literature review of the PD approach was conducted to develop this proposal. The review identified several issues that will need to be investigated in more detail as part of this study. During the literature review, 24 programs that used a PD approach were identified, as well as four articles that gave instructions for conducting a PD study or program. The PD approach used varied widely between studies. For example, methods used to identify PD behaviors included qualitative (Awofeso et al., 2008; Friedman et al., 2008; Kim et al., 2008;), quantitative (Aruna, Vazir, & Vidyasagar, 2001; Vossenaar et

al., 2009; Walker et al., 2007), mixed methods exploratory (Babalola et al., 2006; Bradley et al., 2009; The United Nations University, 1990), and mixed methods explanatory (Ahrari et al, 2002; Dearden, Quan, Do, Marsh, Pachón et al., 2002; Wishik & Van Der Vynckt, 1976) designs, as defined by Creswell (2009). In addition, many of the studies did not appear to adhere to the guidelines published by Pascale et al. (2010), such as the requirement that all steps be fully participatory. There were no articles that attempted to compare or consolidate the different designs. Only one study attempted to validate the PD approach by comparing a quantitative case-control study using a sample of 50 families, with a small qualitative phenomenological PD study using a sample of eight families to see which method would be more successful in identifying behaviors related to positive health outcomes (Lapping, Schroeder et al., 2002). The authors concluded that the small-scale qualitative PD study is an affordable and valid rapid assessment tool, although using both methods would be optimal if resources allowed.

In addition to the overall methods used, there are a number of other key areas where studies differ in their PD approach. These areas include how success is defined to identify positive deviants, what is considered a PD behavior, and whether distinctions are made between PD behaviors that can be transferred to others and those that are "True But Useless (TBU)" (Save the Children, n.d., p.4).

Related Approaches and Theories in Community Health

The PD approach shares many similarities with other approaches in community health, including participatory approaches (Minkler & Wallerstein, 2008), appreciative inquiry (AI; Cooperrider, Whitney, & Stavros, 2008), assets based community development (ABCD; Mathie and Cunningham, 2003), and resiliency (Zeller, 1991). A

clearly defined distinction between the PD approach and these other approaches is yet to be developed. None of the studies identified during the literature review presented any analysis of the theoretical underpinnings of the approach, or its relationship to other similar approaches.

Problem Statement

While the PD approach has now become a relatively well established technique in specific areas of practice such as nutrition and MRSA prevention, there have been calls for it to be used more widely (Devane, 2009; Lapping, Marsh et al., 2002; Marsh et al, 2004; Marsh & Schroeder, 2002) and for it to become a standard part of the community health worker's toolbox (Lapping, Marsh et al. 2002; Marsh et al, 2004;). The PD approach is still not included as a technique in many health promotion and community health textbooks, such as those by McKenzie, Neiger, and Thackery (2009), Minkler and Wallerstein (2008), Issel (2004), and McKenzie, Pinger, and Kotecki (2008), while other participatory approaches are included.

Before the PD approach can be formalized as a standard part of community health practice, several gaps in understanding of the approach need to be filled. There have been many reports of the PD approach being used in community health practice. However, there has been little scientific research into the wide variation of PD approaches currently in use, the characteristics of programs using the PD approach, or the effectiveness of the PD approach in a range of different contexts.

Purpose of the Study

The purpose of the study was to identify, describe, and analyze multiple case studies of past and present community health programs that use the PD approach. This

analysis provides an overall picture of how, where, and when the PD approach is currently being used and its diffusion through community health practice. The study also helps better define the spectrum of PD approaches currently in use and attempts to group them into a typology of PD approaches. Finally, the study assesses both qualitative and qualitative evidence for the effectiveness of the PD approach in a range of community health contexts. As a result of better defining the PD approach and its current use and potential effectiveness, it is possible to provide evidence for and against its wider use in mainstream community health practice.

Nature of the Study

This study uses qualitative case study research with a focus on document review to identify and analyze community health programs that have used the PD approach. Forty PD program case studies and 32 PD inquiry case studies were developed using 226 publicly available program documents, including program reports, training manuals, presentations, workshop notes, web pages, evaluation papers, online audiovisual materials, and published peer reviewed studies. PD programs included all stages of the PD approach from identifying positive deviants and their behaviors through implementing a program to spread the behaviors to others. PD inquiries only included the first stages of identifying positive deviants and their behaviors but did not use this information to design or implement a program.

Documents were identified by searching a range of academic and gray literature databases and websites of organizations known to implement and document PD programs. A predefined search strategy and inclusion criteria were used to identify and select documents. Documents were included if they describe all or part of a PD program

on any health related topic, or any topic related to known social determinants of health.

A document data collection form (Appendix A) was used to capture the key information from each document in a standardized format. A single PD program often had several pieces of documentation associated with it. For example, a training manual, presentation, evaluation report, and peer reviewed study may all be published about the same PD program. Therefore, the first step in the analysis involved identifying groups of documents that related to the same PD program.

Once each unique PD program/PD inquiry and its associated documents had been identified, within-case analysis (Miles & Huberman, 1994) was used to complete as many fields as possible in the program / inquiry data collection form (Appendix B). Each program / inquiry data collection form then represented a single case study of a PD program. A cross-case analysis (Miles & Huberman, 1994) was conducted in order to identify common themes and trends across multiple case studies to answer the research questions.

Research Questions

The following research questions and subquestions guided this study:

1. How is the PD approach currently being used in community health practice?
    - 1.1 What health related topics has the PD approach been used to address?
    - 1.2 What settings has the PD approach been implemented in?
    - 1.3 Which types of organizations are implementing programs that use the PD approach?
    - 1.4 To what extent do programs based on the PD approach follow the steps defined by Pascale et al. (2010)?

1.5 To what extent do programs based on the PD approach incorporate community participation in each step?

1.6 To what extent is the PD approach incorporated into integrated programs versus stand-alone programs?

2. How has the PD approach diffused through community health practice?

2.1 Has the diffusion followed the principles of theory of diffusion of innovations?

2.2 How has this diffusion progressed geographically, chronologically, and between community health issues?

2.3 Can groups of innovators, early adopters, early majority, late majority, and laggards be identified?

2.4 Are there characteristics of PD that have made it more or less likely to spread quickly, such as relative advantage, compatibility, complexity, trialability, and observability?

3. Can the range of PD approaches currently in use be grouped into a typology of PD approaches?

3.1 Are particular PD approaches more commonly used in specific contexts or settings?

4. What quantitative and qualitative outcomes have been reported from programs that use a PD approach, and with what level rigor were the studies conducted?

Theoretical Base

The PD approach is a technique developed by practitioners in the field. It does not have a specific theoretical underpinning in the literature, and Pascale et al. (2010)

deliberately avoided referring to it as a theory. This study investigated the use of the PD approach in practice and the evolution of different types of PD approaches. The conceptual framework used for this analysis was the theory of diffusion of innovations as proposed by Rogers (1995). The theory of diffusion of innovations describes the spread of new ideas and innovations throughout a population. It divides the population into different groups based on how quickly they adopt a new idea; for example, innovators, early adopters, early majority, late majority, and laggards. It also identifies characteristics of innovations that make them more likely to spread quickly, such as relative advantage, compatibility, complexity, trialability, and observability (Rogers, 1995). The spread of the PD approach throughout community health practice can be seen as the diffusion of an innovation. By examining the geographic and temporal distribution of PD programs, this study mapped the diffusion of the PD approach throughout community health practice. This analysis included identifying innovators and early adopters as well as characteristics of the PD approach that make it more or less likely to spread further.

Definition of Terms

Positive deviance (PD) approach: An approach to solving community problems that focuses on positive deviance within the community, rather than focusing on the community's needs. The approach uses solutions that already exist in the community to bring about sustainable behavioral and social change (Pascale et al., 2010).

Positive deviance (PD) concept: The concept that "in every community or organization, there are a few individuals who have found uncommon practices and behaviors that enable them to achieve better solutions to problems than their neighbors who face the same challenges and barriers" (Pascale et al., 2010, p. 206).

Positive deviance Inquiry (PDI): The stage in the PD process where positive deviants are identified within a community and their successful behaviors and solutions are documented (Pascale et al., 2010).

Positive deviant: An individual or group who "demonstrates special or uncommon behaviors and strategies that enable the person or group to overcome a problem without special resources. However, a person is defined as a PD only in the context of a specific problem" (Pascale et al., 2010, p. 206).

Positive deviant (PD) behavior: An uncommon behavior practiced by a positive deviant that allows them to be more successful than their neighbors who have access to exactly the same resources.

Assumptions

The following assumption was made in this study: There is enough valid and reliable publicly available documentation on program case studies to provide meaningful conclusions.

Limitations

This study was limited in two ways. First, the case studies were limited to those that can be described using publicly available documentation. Second, the case studies may be subject to publication bias if researchers have not published documents on programs that failed or had negative results.

Delimitations

Only publicly available documents, including peer reviewed studies and gray literature documents, were used as sources for analysis. Only programs related to a health topic or to known social determinants of health were included. Only English language

documents were included.

Significance of the Study

This study addressed a gap in the existing PD literature by helping to better define the spectrum of PD approaches currently in use, the types of programs currently using the PD approach, and their effectiveness in a range of contexts. As a result of better defining the PD approach and potential effectiveness, it is possible to provide evidence for and against its wider use in mainstream community health practice. This research has direct implications for practitioners in the field. As the first broad scientific study of the PD approach itself, it also provides a foundation for future research into the PD approach. Ultimately this study has the potential to contribute to positive social change by creating a better understanding of the positive deviance approach, whether or not it should be used more frequently in community health, and the settings in which it has been shown to be effective already. This study also contributes to raising awareness of PD in the community health field, increasing the likelihood that the PD approach will be used to solve a wider range of community health problems and that it will be incorporated into community health texts and training programs for the areas where it has been shown to be successful.

Summary

The PD approach shows promise as a means of solving ingrained community health problems using existing solutions. However, before PD can become a mainstream approach in community health, several gaps in our understanding of the approach need to be addressed. There appears to be wide variation in PD approaches, and the effectiveness of these approaches in a range of different contexts is unclear. This study used a

qualitative case study and historic approach to help better define the spectrum of PD approaches currently in use, describe the types of programs that have used the PD approach, and evaluate their effectiveness in a range of contexts. As a result of better defining the PD approach and potential outcomes, it is possible to provide evidence for and against its wider use in mainstream community health practice.

The following chapters describe the study in detail. Chapter 2 gives a full literature review, Chapter 3 details the methodology, Chapter 4 describes the results, while Chapter 5 discusses the results and presents recommendations for future action and research.

Chapter 2: Literature Review

Introduction

This literature review examines the history and past applications of the PD approach and the need for further research into the approach itself. Following this section is a brief review of other approaches that share similarities with PD, such as appreciative inquiry and participatory research. A review of qualitative case study and document analysis is also included.

Research Strategy

The PD approach has been applied to problems in many different fields. Therefore, I searched multiple databases in a range of fields simultaneously using the EBSCO, ProQuest, Ovid, and SAGE interfaces accessed through the Walden University Library. The final list of databases searched included CINAHL Plus, MEDLINE, PsycARTICLES, PsycBOOKS, PsycINFO, SocIndex, Mental Measurements Yearbook, Academic Search Premier, Political Science Complete, Communications & Mass Media Complete, ProQuest Nursing & Allied Health, ProQuest Dissertations and Theses, ProQuest Central, ProQuest Health and Medical Complete, ProQuest Psychology Journals, Science Journals, Social Science Journals, Health Sciences Collection, and Political Sciences Collection. For the PD component I searched for all articles containing the term *positive deviance*. I did not place any restrictions on PD articles in terms of publication date or location. Articles were restricted to those published in English. I sourced additional documents on PD from the Positive Deviance Initiative website (2010e). These included descriptions, evaluation reports, quotes, and interviews from PD

informed programs. I reviewed the references lists for all articles to locate additional resources.

In addition, I searched the following databases for previous systematic reviews on PD: Database of Abstracts of Reviews of Effects (DARE), the Cochrane Database of Systematic Reviews, and the Campbell Library. No existing reviews of PD were identified.

Positive Deviance

This section describes the history of the PD approach and its benefits and limitations in practice. The section ends with an overview of the different types of PD methods found in the literature.

History of Positive Deviance

In popular culture the word deviant usually has negative connotations and is applied to people, such as criminals and psychopaths, who deviate from the social norms in a negative way. According to Babalola et al., (2006) the idea that it is possible to have both positive and negative deviants was first raised by the sociologist Pitirim Sorokin in the 1950s. The concept of positive deviance has been debated by sociologists ever since, with camps for (Heckert, 1985, 1998; Spreitzer & Sonenshein, 2004; West, 2004) and against (Edward, 1985; Goode, 1991) its use as a term.

Although sociologists may debate the use of the term positive deviance, the idea that individuals can deviate both positively and negatively from the norm makes intuitive sense. In a normal distribution there will always be a small number of individuals at the far ends of the spectrum. These individuals deviate from the majority in positive and

negative ways. In other words, positive deviants are those people who experience "success in spite of hardship" (Hendrickson et al., 2002, p. 84).

The concept of PD first entered the community health arena in the 1970s, initially in the field of child nutrition. Wishik and Van Der Vynckt (1976) were one of the first groups to suggest that solutions to childhood malnutrition could be found by looking for low income families with well-nourished children. They called these families positive deviants. In their seminal paper, Wishik and Van Der Vynckt (1976) proposed a method in which a survey of children's height and weight could be used to identify the small number of children who were well nourished, despite being born into families with a very low socioeconomic status. The aim was to find out what the mothers of these children were doing that allowed their children to be well nourished, while most of the other children in the community were malnourished. These behaviors could then be incorporated into a nutrition program, knowing that they were both affordable and culturally acceptable because they were already practiced by members of the community. Although they published their proposed methodology, Wishik and Van Der Vynckt (1976) never published the results of the study.

The term positive deviance was first used to describe this approach by Marian Zeitlin, as part of her pioneering work in the 1990s documenting positive deviance in child nutrition (Zeitlin, Ghassemi, & Mansour, 1990). The term positive deviant inquiry has only come into use only more recently, in papers such as that by Lapping, Schroeder et al. (2002). Since the concept surfaced in the 1970s, variations of the PD approach have been used to find indigenous solutions to child malnutrition in a wide range of

countries (Bolles et al., 2002; Dearden, Quan, Do, Marsh, Pachón et al., 2002; Guldan et al., 1993; Lapping, Schroeder et al., 2002; Levinson et al., 2007; Sethi et al., 2003; Sethi et al., 2007). The PD approach has also been used to find solutions for nurse-patient communication in Indonesia (Kim, Heerey, & Kols, 2008), safe sex practices in African countries (Babalola et al., 2006; Babalola, Awasum, & Quenum-Renaud, 2002), smoking cessation in Australian prisons (Awofeso et al., 2008), HIV and Hepatitis C prevention among injection drug users in the U.S. (Friedman, Mateu-Gelabert, Sandoval1, Hagan, & Des Jarlais, 2008), cancer risk in Guatemala (Vossenaar et al., 2009), healthy eating for low income pregnant women in the U.S. (Fowles, Hendricks, & Walker, 2005), newborn care in Pakistan (Marsh, Sternin et al., 2002), pregnancy outcomes in Egypt (Ahrari et al., 2002), and overall health status in the Netherlands (Mackenbach et al., 1994). The PD approach has also been used to address nonhealth issues, including public extortion in the UK, US, India, and China (Horowitz, 2008), gender equity in Brazil (Barker, 2000), poverty and economic development (Biggs, 2008; Milton & Ochieng, 2007), the elimination of sweatshops (Arnold & Hartmann, 2005), and increasing sales in for-profit companies (Pascale et al., 2010).

The PD approach has been incorporated into PD informed programs that aim to identify and promote PD behaviors. A small number of these programs have been evaluated, with some showing very positive results. For example, programs using the PD approach have succeeded in reducing rates of childhood malnutrition (Mustaphi & Dobe, 2005; Trinh Mackintosh et al., 2002), reducing low birth weight (Ahrari et al., 2006), reducing the incidence of healthcare associated infections in hospitals (Marra et al.,

2010), and improving maternal iron supplementation (Ndiaye, Siekmans, Haddad, & Receveur, 2009).

The most rigorously studied example of a program using the PD approach is the work done by Save the Children in Vietnam on child malnutrition (Hendrickson et al., 2002; Marsh et al., 2002; Marsh et al., 2007; Sripaipan et al., 2002; Trinh Mackintosh et al., 2002). The initial positive deviance inquiry (PDI) for the program identified a range of PD behaviors practiced by mothers with well-nourished children. One of the key behaviors was collecting tiny shrimp from the rice paddies and feeding them to their children along with the greens from sweet potato tops. Both these foods were freely available to all members of the community, but most other members of the community did not believe they were appropriate for children (Sternin, 2002). This finding, along with others, was incorporated into a nutrition program which resulted in a 74% reduction in child malnutrition (Marsh et al., 2004) that was maintained 3-4 years after the end of the program (Trinh Mackintosh et al., 2002). The follow-up evaluation showed that the PD practices had also been maintained for subsequent children born after the end of the program. These children were even more likely to be well nourished than their older siblings who had participated in the program (Trinh Mackintosh et al., 2002). This program in Vietnam was the first PD program run by Jerry Sternin and Monique Sternin, the two individuals who appear to have been most active in promoting the PD approach and who subsequently set up the Positive Deviance Initiative at Tufts University. Their book, “The Power of Positive Deviance,” describes several of the PD programs they have worked on and provides guidelines for practitioners wanting to use their PD approach

(Pascale et al., 2010).

Another area where the PD approach has been applied and evaluated is the prevention of MRSA transmission in U.S. hospitals (Singhal & Greiner, 2007). The use of PD in this field was also initiated by Jerry Sternin (Pascale et al., 2010) but has since taken on a life of its own after his death in 2008. In these programs the PD approach has been used to identify staff members in hospitals who practice behaviors that prevent MRSA transmission. Gertner (2008) described the example of Jasper Palmer, an orderly who came up with a new method of removing an MRSA exposed hospital gown and sealing it inside a glove. This procedure has since been dubbed the Palmer method and has spread to other staff in the facility. In one hospital MRSA infections declined 55% when a PD initiative that required no extra resources was implemented; this is compared to a 35% reduction after using an external quality management system that was unsustainable in the long term because it required large amounts of funding (Singhal & Greiner, 2007).

As a result of these studies, the PD approach has now become a relatively well established technique in nutrition and MRSA prevention. However, despite many calls for it to be used more often in other areas (Devane, 2009; Lapping, Marsh et al., 2002; Marsh & Schroeder, 2002; Marsh et al, 2004), and for it to be a standard part of the community health worker's toolbox (Lapping, Marsh et al., 2002; Marsh et al, 2004), the PD approach is still not included as a technique in many health promotion and community health textbooks, such as those by McKenzie et al (2009), Minkler and Wallerstein (2008), Issel (2004), and McKenzie, Pinger, and Kotecki (2008). This lack of

attention may in part be due to a lack of scientific research into the approach itself. Although there are many reports of the PD approach being used in practice, there are no studies on the wide variation of PD approaches currently in use, the characteristics of programs using the PD approach, or the effectiveness of the PD approach in a range of different contexts.

Benefits of the Positive Deviance Approach

The PD approach is an assets based approach, similar to appreciative inquiry and assets based community development (ABCD; ACCESS, 2009). Assets based approaches stand in contrast to the "needs based" approach often used in international development and community health (Sternin, 2002). In a needs based approach, factors in the community that are causing the problem are identified by bringing in outside solutions, experts or resources (Sternin, 2002). Even if these outside solutions are culturally acceptable to the community, experience has shown that they are often not sustainable in the long term (Lapping, Marsh et al., 2002; Sternin, 2002). A needs assessment will usually also identify complex social determinants of problems, including poverty, education, socioeconomic status, discrimination, and lack of infrastructure that can take many years to address. Conventional approaches to development suggest that all these underlying determinants must be addressed before a solution can be found (Sternin, 2002).

By comparison, in the PD approach, individuals within the community who have already found full or partial solutions to the problem using the existing resources are sought (Positive Deviance Initiative, n.d.; Sternin, 2002). Because these behaviors are

already being practiced by some members of the community they are likely to be affordable, acceptable and sustainable in the long term (Marsh & Schroeder, 2002; Sternin, 2002; Trinh Mackintosh et al., 2002). The solutions can also be implemented immediately, without waiting for all the underlying determinants of the problem to be addressed (Sternin, 2002).

Many researchers and practitioners have also suggested that the PD approach has additional intangible benefits for community development – beyond finding practical solutions to community problems. Anecdotal evidence from programs and studies using the PD approach has suggested that it can lead to community mobilization and enthusiasm (Marsh et al, 2004; Save the Children, n.d.; Singhal & Greiner, 2007), improved social networks (Buscell, 2008; Singhal & Greiner, 2007), reduced aid dependency (Milton & Ochieng, 2007; Schooley & Morales, 2007), community empowerment (Hendrickson et al., 2002; Schooley & Morales, 2007), community pride (Marsh et al, 2004; Marsh, Sternin et al., 2002), group ownership of the problem (Singhal & Greiner, 2007), enhanced problem solving skills (Marsh et al, 2004), improved advocacy (Awofeso et al., 2008; Lapping, Marsh et al., 2002; Sternin, 2002), and outside experts showing increased respect for the community (Sternin, 2002). The following quotes from PD practitioners and community members illustrate some of the anecdotal evidence behind these claims:

Quotes from community members involved in programs that use a PD approach:

> When people come from outside, it does not feel good. But if we see the things with our eyes, and try them practically, and see some people practicing them, this

> has a good effect on people. (Positive Deviance Initiative, 2010a, para. 3)
>
> PD is like a flashlight. It helps to shine light and illuminate what hides behind the darkness. It helps us discover what already exists. For example, it helps us discover our existing strengths we had not realized or utilized. (Positive Deviance Initiative, 2010b, para. 1)
>
> After a few days of camping in the desert, Abdulkadir the translator, confided to the PD INGO team what he overheard from a conversation among several of the elders. They were amazed at the fact that the outsiders had come 3 times to the water hole to "sit at our feet, and listen to us!" "Not even our own children pay us that kind of respect," one man added. (Positive Deviance Initiative, 2010c, para. 3)
>
> Though we did not know, we are very proud of these Afghans who practice good behaviors most of us are unaware of. (Marsh, Sternin et al., 2002, p. 113).

Quotes from PD practitioners:

> Participants have said that they are motivated by learning that they are doing something right and that a successful solution to their problem already exists within the community, instead of receiving criticism for their inadequacies. (Marsh et al, 2004, p. 1177)
>
> …the constant turn outward in search of solutions to national problems has tended to bury possibilities and to dampen national innovation [the "indifference trap"]….this paper suggests positive deviance and appreciative enquiry approaches as organizing frameworks for identifying and amplifying the work of

African innovators, thereby solving the problem of "indifference trap." (Milton & Ochieng, 2007, p. 455).

Although anecdotal evidence for these intangible benefits abounds, there has only been one study that investigated them in detail. Hendrickson et al. (2002) used interviews to study empowerment among participants in a PD informed nutrition program. Overall they found a significant improvement in participants' empowerment compared to the control group. However, because it was an integrated nutrition program, it was impossible to separate the effects of the PD component from other parts of the program, such as health education sessions.

Therefore, due to a lack of research, PD practitioners cannot be certain that the PD approach does actually lead to the intangible benefits that anecdotal evidence suggests. It is also unknown which theoretical models of community development might apply to the PD approach, such as theories of empowerment (Thompson, 2007), capacity building (Minkler & Wallerstein, 2008), or community organizing (McKenzie, Neiger, & Thackery, 2009). Because of this, understanding the intangible effects of the PD approach has been identified as an important area in need of further research (Marsh et al, 2004; Schooley & Morales, 2007).

Limitations of the Positive Deviance Approach

While the PD approach appears to have many benefits, it also has limitations. By definition, solutions found through the PD approach are those which can be implemented immediately with existing resources (Sternin, 2002). They do not usually address the underlying causes of the problem, which require a long term strategy. They are also

highly context specific, and cannot be transferred to other communities, or even between different seasons of the year (Berggren & Wray, 2002). Each time program planners enter a new community, the PDI must be repeated. For example, Marsh, Sternin et al. (2002) showed significant differences in PD behaviors between Afghan refugees and Pakistani nationals living in the same community. Each group required their own PDI.

As communities change over time, behaviors that were considered positive initially may eventually be considered negative (The United Nations University, 1990). For example, not expressing and storing breast milk might be considered a PD behavior in hot climates where refrigerators are not available, as the chance of contamination is high. However, if the community develops and most houses acquire a refrigerator and good hygiene practices then expressing and storing breast milk becomes a positive behavior because it allows mothers to exclusively breastfeed while still working (The United Nations University, 1990).

Pascale et al. (2010) acknowledge the PD approach is not panacea solution for all community health issues. They argue that PD should only be used when no other solutions have worked, as a last resort. The Positive Deviance Initiative (2009) have proposed several criteria that can be used to determine whether a PD approach is suitable for the problem being addressed: (a) The problem requires behavioral or/and social change rather than a technological solutions; (b) The problem is ongoing and other potential solutions have failed; (c) Positive deviants exist in the community; and, (d) community leaders are committed to solving the problem. In addition to these criteria, Devane (2009) has also identified a range of situations when the PD approach is likely to

be unsuccessful: (a) The problem requires a technical solution and cannot be solved through behavior change; (b) Complex analysis, data collection, or specialized technical skills are required to identify a solution; or, (c) There is disagreement about what needs to be done and/or low certainty that the problem will be solved, even if behavior is changed. PD is also less likely to be effective in certain cultures, particularly those that are collective rather than individualistic where celebrating individual achievements is not considered appropriate (Schooley & Morales, 2007).

Positive Deviance Methodology

Many authors have presented different versions of the steps required to implement the PD approach (Bradley et al., 2009; Devane, 2009; Marsh et al, 2004; Marsh, Sternin et al., 2002; Positive Deviance Initiative, 2009; Save the Children, n.d.; Schooley & Morales, 2007; Walker et al., 2007), although all include variations on the four D's presented by Pascale et al. (2010, p.202):

1. Define the problem and desired outcome.
2. Determine common practices and whether positive deviants exist.
3. Discover uncommon but successful behaviors and strategies through inquiry and observation.
4. Design an initiative based on the findings to spread the positive deviant behaviors to others in the population.

According to Pascale et al. (2010), the most critical part of the PD approach is that the community must have full ownership of the process from start to finish. This means that the "experts" should only participate as facilitators, and should allow the

community to decide on the problem to be solved, and to discover and disseminate the PD behaviors themselves (Pascale et al., 2010).

The PDI is the second and third step in the development of a PD informed program (Sternin, 2002). The PDI is a "rapid assessment tool" rather than a survey (Berggren and Wray, 2002). A rapid assessment tool is a low cost assessment designed to quickly identify practical solutions that can be implemented immediately. Sternin (2002) supports this distinction:

> The choice of the word 'inquiry' in 'positive deviance inquiry' is worthy of note. Rather than call the process a 'study', which implies a more rigorous examination of positive deviant behaviors, including control groups and statistical analysis of findings, the emphasis is on a quick, practical 'inquiry' which enables the community to act immediately. Hence, scientific rigour is sacrificed in favour of expeditious programme implementation. (p. 59)

As discussed in the introduction, the literature review identified 24 programs that used a PD approach, and four articles that gave instructions for conducting a PDI or program based on the PD approach. There was a wide variation between studies in the type PD approach used, including qualitative, quantitative, mixed methods exploratory, and mixed methods explanatory designs. In addition, many of the studies did not follow the guidelines published by Pascale et al. (2010). For example, many did not have fully participatory designs, and so the community did not own the process from start to finish. No review articles were identified which compared or consolidated the different designs. This supports the need for a meta-analysis of studies that use the PD approach.

Only one study attempted to validate the PDI methodology. Lapping, Schroeder et al. (2002) compared a quantitative case-control study using a sample of 50 families, with a small qualitative phenomenological PDI using a sample of 8 families, to see which approach identified the most PD behaviors associated with child nutrition among Afghan refugees. They found that the PDI identified many of the same behaviors as the case-control study. There were also a number of behaviors that were only identified by the PDI, and were not identified by the case-control study. These were the more complex behaviors that are difficult to measure on a survey, such as active feeding and maternal affect. However, the PDI did miss a few behaviors that were identified by the case-control study, such as immunizations and use of healthcare services. The authors concluded that the small-scale qualitative PDI is an affordable and valid rapid assessment tool, although using both methods would be optimal if resources allowed.

In addition to the overall methodology, there are a number of other key areas where studies differ in their PD approach. The first is the way in which "success" is defined in order to identify positive deviants. In some studies the outcome used to define positive deviants is health status, such as lack of infection with HIV or HCV (Friedman et al., 2008), healthy weight and height (Aruna et al., 2001; Levinson et al., 2007; Wishik & Van Der Vynckt, 1976), newborn survival (Marsh, Sternin et al., 2002), or the absence of chronic conditions (Mackenbach et al., 1994). In other cases the outcome is a behavior that is known to be associated with positive health outcomes, such as delaying first sexual intercourse (Babalola et al., 2006), practicing safe sex (Babalola et al., 2002), not smoking (Awofeso et al., 2008), following nutritional guidelines (Vossenaar et al., 2009;

Fowles et al., 2005) and practicing exclusive breast feeding (Dearden, Quan, Do, Marsh, Pachón et al., 2002).

Studies also differed in what was considered to be a PD behavior. The United Nations University (1990) defines a PD behavior as something that is "significantly related to positive-deviant…status; and not yet dictated by rules that are endorsed by scientists and health professionals" (para 20). However, many other studies included a behavior as PD if it was not commonly practiced by the community, even if it had already been endorsed by scientists and health professionals. An example of this is exclusive breast feeding, which is already known to be beneficial for a child's health, but was still identified as a PD behavior by Lapping, Schroeder et al. (2002) and Dearden, Quan, Do, Marsh, Pachón et al. (2002) because it was not a common practice in the community.

In some studies, distinctions could be made between PD behaviors that can be transferred to others, and those that are "True But Useless" (Save the Children, n.d. p.4). That is, they are true for that particular positive deviant, but cannot be transferred to other people in the community. For example, Lapping, Schroeder et al. (2002) identified the following PD behaviors as true but useless for improving child nutrition among Afghan refugees in Pakistan: The family helping the mother with care giving, the father taking an active role in family life, and the mother not exhibiting a depressed temperament. These behaviors cannot be transferred easily because the first two go against deeply ingrained social norms and the final one is related to individual personality. By comparison, they considered the feeding of special foods, such as shira (made with sugar, flour, oil and

water) and arkhanak (wild vegetables) to be PD behaviors that were both true and useful – they could easily be transferred to other members of the community. Marsh, Sternin et al. (2002) and Save the Children (n.d.) both emphasized the need for the community to be involved at the end of the PDI to validate the identified PD behaviors, and eliminate those that are true but useless. However, not all PDI studies make the distinction between useful PD behaviors and true but useless behaviors. For example, Aruna et al. (2001), Babalola et al. (2006), Fowles et al. (2005), and Friedman et al. (2008) all included nontransferable behaviors, sociocultural factors, and personality traits in their identified list of PD behaviors.

Finally, some programs include "booster PDIs" at key points throughout the program to identify new adopters of the behavior and determine what has allowed them to adopt it (Lapping, Marsh et al., 2002; Marsh et al., 2007).

As can be seen from this discussion of PDI design, there are still a lot of gaps in our understanding of how the PD approach should work, and whether current programs are using the best approach. More research is needed to determine the range of PD approaches currently in use, and how the different methodologies relate to the tangible and intangible benefits it brings to the community (Lapping, Marsh et al., 2002; Marsh et al, 2004; Marsh & Schroeder, 2002).

Related Approaches and Theories in Community Health

The PD approach shares many similarities with other approaches in community health, which are described below. A clearly defined relationship between the PD approach and these other approaches is yet to be developed.

Participatory Approaches

Participatory approaches have a long history. Starting with action research in the 1940s, they have evolved to include a wide range of related definitions and terms, including participatory research, Participatory Action Research (PAR), Community Based Participator Research (CBPR), rapid assessment procedures, constructivist inquiry, emancipatory inquiry, community-partnered participatory research, and participatory evaluation (Minkler & Wallerstein, 2008).

CBPR - one of the most common terms - is defined by the U.S. National Institutes of Health (NIH) as:

> Scientific inquiry conducted in communities in which community members, persons affected by condition or issue under study and other key stakeholders in the community's health have the opportunity to be full participants in each phase of the work: conception, design, conduct, analysis, interpretation, conclusions, and communication of results" (NIH, 2008, para. 2).

There is not a single level of community participation within participatory approaches; rather, there is a spectrum of community participation (Israel et al., 2008). One of the earliest papers to describe this spectrum was by Arnstein (1969). Arnstein described the levels of community participation in terms of a ladder. Starting at the top of the ladder, the three highest levels of participation are citizen control, delegated power, and partnership. Arnstein described these three rungs as "citizen power". At these levels community members hold the majority of decision making power, and can ensure their wishes are implemented. The next three rungs are placation, consultation, and informing,

which Arnstein refers to as “tokenism”. At these levels community members are able to have their voice heard by power holders, but are not able to ensure that their wishes are actually implemented. At the bottom of the ladder are manipulation and therapy, which are considered “nonparticipation.” At these levels the true objective is allowing those with power to control the community through supposedly positive initiatives such as education and care. Historically, participatory research studies have ranged from tokenism through to true community power and participation (Israel et al., 2008).

The PD approach as defined by Pascale et al. (2010) is intended to be a participatory approach. One of the guiding PD principles identified by Pascale et al. (2010) is that “the community must own the entire process” (p.196), with the researchers and experts taking a back seat. On Arnstein’s scale this would count as the highest rung on the ladder – citizen control (Arnstein, 1969). However, no review has been conducted to determine how many of the PD studies and programs actually adhere to this high level of participation.

In addition to being part of the group of participatory research approaches, the PD approach shares similarities with some specific participatory approaches. For example, one of the primary aims of action research is to “produce practical knowledge that is useful to people in the everyday conduct of their lives.” (Minkler & Wallerstein, 2008, p 226). Clearly then, the PD approach is an example of action research, as its aim is to discover successful behaviors and solutions from within the community that can be implemented immediately by the rest of the community as part of their daily lives.

If run according to the guidelines by Pascale et al. (2010), the PD approach should

also directly incorporate participatory evaluation as defined by Minkler and Wallerstein (2008). The community should decide on how the program is to be monitored, and should conduct the monitoring and evaluation. Again, there have been no reviews of PD studies to determine if this is a widely followed practice.

The PD approach should also incorporate the principle of endogenous development. Endogenous development allows communities to take control of their own development process, and emphasizes the need for communities to set their own criteria for development (COMPAS, 2007). The PD approach according to Pascale et al. (2010) meets this requirement by allowing the community to decide what problem they would like to address and to opt in or out of the PD process.

In order to enact participatory approaches, a process of community organization is required. Community organization is defined as a "process through which communities are helped to identify common problems or goals, mobilize resources, and in other ways develop and implement strategies for reaching the goals they have collectively set" (Minkler & Wallerstein, 2005, p. 26). If the PD approach is participatory in the way that Pascale, Sternin and Sternin (2010) describe, then it will require community organizing in order for the community to select the problem, identify and implement the solutions, and collectively evaluate the program.

Assets Based Approaches

When using an assets based approach, a practitioner looks for existing resources and opportunities within the community, which stands in contrast to the "needs based" or "problem centered" approach often used in international development and community

health (Sternin, 2002). The PD approach is considered an assets based approach (ACCESS, 2009; Pascale et al., 2010). Two common assets based approaches are appreciative inquiry (AI) and assets based community development (ABCD).

Cooperrider, Whitney, and Stavros (2008) defined AI as "a philosophy that incorporates an approach…for engaging people at any or all levels to produce effective, positive change" (p. XV). It is based on the assumption that:

> Every organization has something that works right – things that give it life when it is most alive, effective, successful, and connected in healthy ways to its stakeholders and communities. AI begins by identifying what is positive and connecting to it in ways that heighten energy, vision, and action for change. (Cooperrider, Whitney, & Stavros, 2008, p. XV).

At a high level the AI and PD approach look very similar. In both approaches practitioners look for positive aspects within a community. Both have a process that involves four D's. For AI these are discovery, dream, design, and destiny (Cooperrider, Whitney, & Stavros, 2008), while for PD they are define, determine, discover, and design (Pascale, Sternin and Sternin, 2010). At present it is hard to make a definitive distinction between the two, as it is still unclear exactly what is included in the PD approach from the variety of methodologies published. Based on the definition of the PD approach by Pascale et al. (2010), one distinction could be made - the AI approach looks for community success stories first, and then tries to expand them, whereas in the PD approach, a problem is defined first, and then successful solutions within the community are explored. However, a better understanding of what constitutes the PD approach is

required before this distinction can be confirmed.

> Assets Based Community Development is based on the premise that: people in communities can organise to drive the development process themselves by identifying and mobilising existing (but often unrecognised) assets, thereby responding to and creating local economic opportunity. In particular, ABCD draws attention to social assets: the particular talents of individuals, as well as the social capital inherent in the relationships that fuel local associations and informal networks. (Mathie & Cunningham, 2003, p. 474).

As with AI, ABCD focuses on the assets or positive aspects of a community. Some of the key differences are that it focuses on community development and particularly on community economic development. Therefore, the first stage in the process is for the community to determine how it wants to develop (endogenous development) and then the ABCD approach helps the community identify the assets it has that will allow it to develop in the chosen way. ABCD particularly focuses on social capital and social networks as assets that will allow a community to develop in the chosen direction. As with AI, it is difficult to clearly distinguish the ABCD approach from the PD approach without a full understanding of what is included in the PD approach. However, one difference between the ABCD approach as defined by Mathie and Cunningham (2003), and the PD approach as defined by Pascale et al. (2010) could be that the ABCD approach begins with the community deciding how they want to develop, while in the PD approach the starting point is defining a discrete problem for which indigenous solutions are found. Again, a better understanding of what constitutes

the PD approach is required before this distinction can be confirmed.

A related concept that also looks for the positive rather than the negative is "resiliency" (Lapping, Marsh et al., 2002; Zeller, 1991). Models of resiliency have been used in social work for many years to identify positive factors (assets) that can have a protective effect on vulnerable youth (Brokenleg, 2010). However, the definition of resiliency is slightly different to the definition of PD. Resilient individuals are those who manage to maintain normal outcomes despite adversity, while positive deviants are those who achieve above average outcomes despite adversity.

Theory of Diffusion of Innovations

The theoretical framework used for this study is the theory of diffusion of innovations proposed by Rogers (1995). The theory of diffusion of innovations describes the spread of new ideas and innovations throughout a population. In the theory a population is divided into different groups based on how quickly they adopt a new idea; for example, innovators (those who create the new idea), early adopters (those who are first to adopt it in a population), early majority (the majority of people who adopt it after the early adopters), late majority (the majority of people who adopt it later, after the early majority), and laggards (those who resist adopting the new idea). Rogers (1995) also identifies characteristics of innovations that make them more likely to spread quickly, such as the relative advantage compared to other solutions, the compatibility with existing practices and cultures, the complexity, the ease with which the innovation can be trialed, and how easily the results can be observed.

The spread of new approaches through community health practice can be seen as

the diffusion of an innovation. The innovation is the new approach, while the population is community health practitioners. Examples of innovations that have spread throughout community health practice include technological innovations such as new vaccines, as well as novel approaches to program design and evaluation such as CBPR (Israel et al. 2008). Both of these innovations started as new ideas that were initially only practiced by a small number of early adopters, and both have now spread extensively to become a standard part of the community health workers' toolbox.

Classic health promotion models that have diffused throughout public health practice include Prochaska and DiClemente's (2005) stages of change model in which individuals move through the stages of precontemplation, contemplation, preparation, action, and maintenance in order to change their behaviors; the health belief model in which individuals change their behavior based on their perceived susceptibility and severity of the disease, and the barriers and benefits of adopting the new behavior (Rosenstock, Strecher & Becker, 1988); the theory of planned behavior in which individuals change their behavior depending on their behavioral intention, attitude, subjective norms, and perceived behavioral control (Sheppard, Hartwick, & Warshaw, 1988); and Bandura's (1986) social cognitive theory in which behavior is determined by the individual's self-efficacy, goals, and outcome expectations, all of which can be influenced by interactions with others, including the modeling of behaviors by others.

The rate and extent to which PD has spread throughout community health practice is currently unknown. By examining the geographic and temporal distribution of PD programs, this study will seek to map the diffusion of the PD approach throughout

community health practice. This will include identifying innovators and early adopters, as well as characteristics of the PD approach that make it more or less likely to spread further.

Qualitative Case Study Research

This study will use qualitative case study research, with a focus on document analysis. Case study research has a long history in the field of qualitative research, and often relies on existing documents as a source of data (Creswell, 2007; Patton, 2002).

According to Creswell (2007), case study research is "a qualitative approach in which the investigator explores a bounded system (a case) or multiple bounded systems (cases) over time" (p.73). Therefore, case study research is aligned with the purpose of this study, which is to identify, describe, and analyze past and present cases of community health programs that use the PD approach. Information on each case is usually collected through multiple sources in order to build up a full description of the case (Creswell, 2007). These sources can include documents, interviews, observations, and audiovisual material. This is appropriate for the PD approach, as there is a large body of publicly available program documentation describing the use of the PD approach in practice. These publicly available documents can be used to develop case studies of programs that have used the PD approach.

In case study research, a single instrumental case study can be selected to demonstrate a particular issue or concern, or multiple case studies can be selected (Creswell, 2007). Because the aim of this study is to describe the variety of PD approaches and programs in use and the range of contexts in which they are used, a

multiple case study approach is most appropriate. Within-case analysis is used to analyze data in a single case, while cross-case analysis is used to identify common themes across the multiple cases (Miles & Huberman, 1994).

There is a long tradition of using case study research in the field of health. Examples of case study research using documents as a source of information include cases of patients with rare disorders (Davies, 2011), cases of hospitals undergoing healthcare reform (Tjerbo, 2009), cases of public health policies being developed (Daniels & Lewin, 2008), and cases of public health programs being implemented (Khan et al., 2010).

Two other research traditions were considered for this study, but were deemed inappropriate due to the nature of available data sources. Systematic reviews (Petticrew & Roberts, 2006) and qualitative meta-analysis (Timulak, 2009) are two approaches used to draw conclusions across a large body of published research. The majority of systematic reviews, such as those published by the Cochrane Collaboration, focus on evaluating specific health interventions, such as drug treatments, by pooling the results of randomized controlled trials (RCTs) or other experimental or quasi-experimental studies (Higgins & Green, 2009). However, Petticrew and Roberts (2006) argued that systematic reviews can, and should, be used to answer a broader range of research questions when "a general overall picture of the evidence in a topic area is needed to direct future research efforts" (Petticrew & Roberts, 2006, p. 21).

Qualitative meta-analysis is used in a similar way to perform secondary qualitative analysis of published qualitative studies in order to draw more generalizable

conclusions (Timulak, 2009). There is currently no agreed terminology for this method, and others have referred to similar, if not identical, methods as qualitative meta-synthesis (Finlayson & Dixon, 2008; Walsh & Downe, 2005), qualitative meta-study (Paterson et al, 2001), and systematic review of qualitative research (Petticrew & Roberts, 2006).

Both systematic review and qualitative meta-analysis are not appropriate for this study as the source data is primarily drawn from published peer reviewed studies, although gray literature reports can sometimes be included. There is relatively little peer reviewed literature available on the PD approach, and the gray literature available consists of a wide variety of program documents, including program reports, training manuals, presentations, workshop notes, web pages, evaluation papers, and online audiovisual materials. Therefore, multiple case study research is more appropriate in this instance.

Alternative Research Methods

This dissertation is the first to study the PD approach itself, as opposed to a specific application of the PD approach in the field. Almost all previous studies published on PD describe a specific PD inquiry or program that has been implemented in the field. There has been only one previous study that attempted to investigate the PD approach itself by comparing a quantitative case-control study using a sample of 50 families with a small qualitative phenomenological PDI using a sample of eight families to see which approach identified the most PD behaviors associated with child nutrition among Afghan refugees (Lapping, Schroeder et al., 2002). However, this method is only appropriate for comparing the results of the PD approach to the case-control approach for a specific

topic. It is not relevant for investigating the PD approach overall.

Because there has been no previous research into the overall PD approach, no research methods, measurement instruments, or tools have been developed for this purpose. Therefore, all the instruments and tool used in this study were developed by the researcher, or were adapted from other studies.

In conclusion, there are a range of gaps in the PD literature which need to be attended to before PD can be adopted as a mainstream approach in community health. This study contributes to addressing some of these gaps. The following chapter describes the study methodology.

Chapter 3: Research Method

Introduction

The problem being addressed by this study is the lack of research into PD programs, including the variations of PD approaches currently in use, the characteristics of programs using the PD approach, the effectiveness of the PD approach in a range of contexts, and the spread of the PD approach throughout community health practice. These gaps need to be addressed before decisions can be made about whether or not PD should become a standard part of the community health worker's toolbox. Because the problem being addressed is related to the characteristics of PD programs, it is logical for this study to use a multiple case study approach in which each case study describes a PD program. By analyzing a group of case studies describing PD programs, it is possible to draw conclusions about the characteristics of the programs, the types of PD approaches used, and the effectiveness of the programs.

Research Design and Approach

The purpose of the study is to identify, describe, and analyze past and present community health programs that use the PD approach to better define the spectrum of PD approaches currently in use and their effectiveness. Because the study involves the analysis of a series of individual programs, it is appropriate to use a multiple case study approach, with each case study representing one program (Creswell, 2007). The study is not seeking to develop a theory, understand the essence of experience, describe a culture sharing group, or document the life experiences of an individual. Therefore, a grounded theory, phenomenological, ethnographic, or narrative approach was not appropriate

(Creswell, 2007). As described in Chapter 2, systematic review and qualitative meta-analysis were both considered as alternative research traditions for this study. They were deemed inappropriate as they both use published peer reviewed literature as the primary source of data, and there is relatively little of this available for the PD approach.

Publicly available program documentation was used as the source of case study data, including program reports, training manuals, presentations, workshop notes, web pages, evaluation papers, online audiovisual materials, and peer reviewed studies. This documentation is appropriate as a source of data because it is readily available and a large amount exists in the public domain. Because existing documentation was used as the source of data, the case study research had a focus on document analysis.

The conceptual framework used for the analysis was the theory of diffusion of innovations as proposed by Rogers (1995). The theory of diffusion of innovations describes the spread of new ideas and innovations throughout a population. In the theory a population is divided into different groups based on how quickly they adopt a new idea. For example, groups include innovators (those who create the new idea), early adopters (those who are first to adopt it in a population), early majority (the majority of people who adopt it after the early adopters), late majority (the majority of people who adopt it later, after the early majority), and laggards (those who resist adopting the new idea). Rogers (1995) also identified characteristics of innovations that make them more likely to spread quickly, such as relative advantage, compatibility, complexity, trialability, and observability. The spread of the PD approach throughout community health practice can be seen as the diffusion of an innovation. By examining the geographic and temporal

distribution of PD programs, this study maps the diffusion of the PD approach throughout community health practice. The study also identifies innovators and early adopters, as well as characteristics of the PD approach that make it more or less likely to spread further.

Role of the Researcher

The role of the researcher in this study was as the primary individual collecting available documentation, using it to describe the program case studies, and analyzing the case studies to answer the research questions. As the researcher I worked closely with the peer debriefer. Our working relationship is described in more detail in later sections.

Research Questions

1. How is the PD approach currently being used in community health practice?

    1.1 What health related topics has the PD approach been used to address?

    1.2 What settings has the PD approach been implemented in?

    1.3 Which types of organizations are implementing programs that use the PD approach?

    1.4 To what extent do programs based on the PD approach follow the steps defined by Pascale et al. (2010)?

    1.5 To what extent do programs based on the PD approach incorporate community participation in each step?

    1.6 To what extent is the PD approach incorporated into integrated

programs versus stand-alone programs?

2. How has the PD approach diffused through community health practice?

2.1 Has the diffusion followed the principles of the theory of diffusion of innovations?

2.2 How has this diffusion progressed geographically, chronologically, and between community health issues?

2.3 Can groups of innovators, early adopters, early majority, late majority, and laggards be identified?

2.4 Are there characteristics of PD that have made it more or less likely to spread quickly, such as relative advantage, compatibility, complexity, trialability, and observability?

3. Can the range of PD approaches currently in use be grouped into a typology of PD approaches?

3.1 Are particular PD approaches more commonly used in specific contexts or settings?

4. What quantitative and qualitative outcomes have been reported from programs that use a PD approach, and with what level rigor were the studies conducted?

Setting and Sample

Sampling for this study consisted of identifying and selecting publicly available program documents. To ensure consistency, sampling was done using a predefined search strategy and inclusion criteria. Because this is the first such study of the PD approach, an

exhaustive sampling strategy was used in which all documents that meet the inclusion criteria are sampled.

Inclusion Criteria

The criteria for including a document in the study were as follows. The document must describe all or part of a past, present, or future program/study that uses the PD approach. This is based on the author identifying it as using the PD approach. It need not adhere to the core principles of the PD approach as defined by Pascale et al. (2010). The document must be on a health topic or a topic related to known social determinants of health including, but not limited to social class, gender, ethnicity, education, occupation, income, economic development, housing, working conditions, food availability, social exclusion, and access to infrastructure such as health services and sanitation (WHO, 2010). The document must be published in English. The document must be available in full text online.

No restrictions were placed on the date of publication or type of document. Program reports, training manuals, presentations, workshop notes, web pages, evaluation papers, online audiovisual materials, and peer reviewed studies were all included. Documents containing a general discussion of the PD approach, without any reference to a specific program, were excluded.

Sampling Methods

The protocol used to identify and sample the documents varied based on the type of document being sampled. Sampling of published peer reviewed studies was done according to the following protocol:

1. All databases listed in Appendix C were searched for any articles that contain the term *positive deviance*. Because the inclusion criteria for includes studies on social determinants of health, a wide range of health and social science databases, and a number of multidisciplinary databases, were included in Appendix C.
2. The abstracts of all articles were retrieved.
3. I reviewed all the abstracts and exclude studies that did not meet the inclusion criteria.
4. The full text of the remaining articles was retrieved.
5. In addition to searching databases, the Food and Nutrition Bulletin was hand searched to identify all PD studies. The Food and Nutrition Bulletin published the largest number of PD studies identified for this proposal, and so it was possible that there could be additional articles published in the journal that would not be identified by a database search. Hand searching of key journals such as this has been shown to improve the accuracy of systematic reviews, which have a similar approach to this study (Petticrew & Roberts, 2006).

Sampling of program documentation in gray literature was done according to the following protocol:

1. All sources of gray literature listed in Appendix D were searched for any articles or reports that contain the term *positive deviance*. Items were reviewed and included if they meet the inclusion criteria defined above.

2. All documents available on the Positive Deviance Initiative website (2010e) were reviewed and included if they met the inclusion criteria.
3. All documents referenced in the book "The Power of Positive Deviance" by Pascale et al. (2010) were reviewed and included if they met the inclusion criteria.
4. An Internet search was conducted using the search engine Google and the search term *positive deviance*. Results were reviewed and included if they meet the inclusion criteria.

The reference lists for all documents was reviewed to locate additional documents. These were reviewed and included they meet the inclusion criteria.

Data Collection and Analysis

This section describes how the data were collected and analyzed, as well as the steps taken to ensure validity and reliability.

Data Collection

I read through all the documents that meet the inclusion criteria. Initial data collection involved the extraction of key data from the documents using the document data collection form in Appendix A. A single PD program often had several pieces of documentation associated with it. For example, there may be a training manual, presentation, evaluation report and peer reviewed study all published on the same PD program. Therefore, the first step in the analysis involved identifying groups of documents that relate to the same PD program. During this process it was found that many of the PD programs were actually only PD inquiries. A PD inquiry is a study in

which positive deviants and their behaviors are identified, but the findings are not used to design and implement a program. Given the substantial number of them identified I made the decision to include PD inquiries in the data set, but to analyze them separately from the full PD programs. A program or inquiry was included as long as there was at least one substantial document describing it. A substantial document was one that allowed at least 80% of the program / inquiry data collection form (Appendix B) to be completed.

Once each unique PD program and its associated documents were identified, within-case analysis was used to complete as many fields as possible in the program / inquiry data collection form (Appendix B). Each program / inquiry data collection form then represented a single case study of a PD program or PD inquiry. A deeper qualitative analysis was conducted of these case studies in order to answer the research questions.

Once each case study was developed using the program / inquiry data collection form (Appendix B), those cases which had data available on the results of an evaluation had the level of rigor of the evaluation assessed using quality appraisal forms. For case studies with a quantitative evaluation design, the quality assessment tool for quantitative studies was used (Appendix E). For case studies with a qualitative evaluation design, the quality assessment tool for qualitative studies was used (Appendix F). In case studies in which a mixed-methods evaluation design was utilized, both assessment forms will be completed. If the case study was missing information on critical items, such as data collection, no conclusions were drawn on its effectiveness, and the quality assessment tools were given a rating of *unknown*.

All documents and completed forms were loaded into a Microsoft database for

storage. A backup copy of the database was kept on an external hard drive. The database will be kept for a minimum of five years after the end of the project. An auditable log was kept in a Word document and Excel spreadsheets with details of the data sampling, collection and analysis processes. This included the location and date when each document was identified, the date of data extraction, any iterative modifications to data collection forms, minutes of peer debriefing sessions, and notes on the evolution of my ideas during the analysis process.

Validity and Reliability

The initial data extraction process into the document data collection form required minor interpretive steps, but was basically a process of data transfer and did not raise significant questions of validity and reliability. However, the creation of case studies using the program / inquiry data collection form, the in-depth analysis of patterns and themes, and the development of a typology of PD approaches raised issues of validity and reliability common to most qualitative research. The primary techniques used to ensure validity and reliability across the entire study was by external audits and peer debriefing with an independent researcher (Creswell, 2007). The external auditor and peer debriefer were the same person for practical reasons. This person has the equivalent of a Masters qualification in Social Science, and over 20 years' experience in planning and evaluation of programs, qualitative and quantitative research, data collection and analysis, facilitation, and policy development. This includes experience using participatory research and community development approaches similar to Positive Deviance, as well as qualitative case study research. He has been published in peer reviewed journals, such as

the Journal of Applied Behavioural Science (Onyx & Bullen, 2000) and Developing Practice (Bullen, 2004), has written book chapters (Onyx & Bullen, 2001), and presented at conferences such as the Australasian Evaluation Society conference. I previously worked with the peer debriefer from 2000 to 2005 as a consulting analyst at the management consulting firm for which he is the director.

An audit log was kept with details of the data sampling, collection, and analysis tasks performed. The external auditor reviewed the first five case studies developed in the program data collection form to ensure that the data extraction process was accurate. This involved the auditor reviewing all source documents for the case studies and comparing them to the data contained in the program / inquiry data collection form to ensure that the case study accurately reflected the information in the program documents. Based on this initial audit, the forms and data collection protocols were refined and enhanced. The auditor then reviewed a further 10% of all program / inquiry data collection forms during the course of the study.

The completion of the quality assessment tools for qualitative and quantitative evaluations (Appendices E and F) also raised issues of validity and reliability. To address this, the external auditor independently completed the quality assessment tools for all case studies that had sufficient information. These results were then compared with my results, and any discrepancies were resolved through discussion to arrive at a final rating for each evaluation study. The external auditor did not complete independent quality assessments of case studies which did not contain sufficient information to complete the quality assessment tool adequately. Criteria for how this is decided can be found in the

quality assessment tools for qualitative and quantitative evaluations (Appendices E and F). This was to avoid wasting the external auditor's time by having him review cases which I had already identified as having insufficient information.

Peer debriefing was used during the analysis process. I identified patterns and themes in the initial data, and discussed and validate these with the second researcher. Together we identified areas for deeper analysis. Written minutes were kept of all peer debriefing sessions (see Appendix G). In addition to peer debriefing, the development of the typology of PD approaches used negative case analysis as a technique to enhance validity (Creswell, 2007). An initial typology was developed, and it was further refined and enhanced until all cases were able to fit into the final typology.

Data Analysis

Data analysis consisted of an open-ended iterative approach based on the theory of diffusion of innovations, with the purpose of answering the four primary research questions. The first step was the analysis of data in the document data collection forms to generate an overall picture of the documentation available. This used tables and charts in Microsoft Excel to examine the number and type of documents, the range of topics, the types of organizations involved, and the dates and locations of publication. Using this information documents were grouped into those that describe the same PD program. Once each unique PD program case study was developed in the program / inquiry data collection form using with-case analysis, a cross-case analysis (Miles & Huberman, 1994) was conducted to identify common themes and trends across multiple case studies in order to answer the research questions.

The first and second research questions were answered using a series of tables and charts in Microsoft Excel to examine the following characteristics of programs: health topics, geographic distribution, chronological distribution, settings, organizations involved, PD steps, community participation, and integration. This analysis used the theory of diffusion of innovations (Rogers, 995) as a framework to chart the spread of the PD approach throughout the global practitioner community.

The third research question involved developing a typology of PD approaches by reviewing each case study in turn, and building up a set of categories until all case studies were able to fit into the classification system. During peer debriefing sessions, the categories were reviewed and refined until a final set was developed. This involved removing extraneous categories and dividing larger categories into smaller categories.

Once the final typology was developed, it was applied to all the case studies. A series of tables and charts in Microsoft Excel were then used to examine relationships between the type of PD approach and other contextual factors, such as the health topic, geographic location, and timeframe of the program.

The final research question was related to the quantitative and qualitative outcomes from programs that use a PD approach. This analysis used the methods and outcome data in the program / inquiry data collection form, the assessment of the evaluation report completeness, and the completed quality assessment tools for quantitative and qualitative studies (Appendices E and F). Each case study was reviewed to identify any positive and negative outcomes, and to assess these in relation to the rigor of the evaluation and completeness of the report. Due to the wide range of topics and

methods, it was not be possible to perform a quantitative meta-analysis of program outcomes. Therefore, qualitative analysis was used to generate an overall picture of program effectiveness in different contexts (Petticrew & Roberts, 2006). When developing the qualitative analysis, greater emphasis was placed on the outcomes of programs that use a more rigorous evaluation design, such as randomized controlled trials and quasi-experimental designs.

Instrumentation and Materials

The study used two data collection forms: the document data collection form (Appendix A) and the program / inquiry data collection form (Appendix B). I developed both forms for the purposes of this study and they have been extensively tested by both myself and the expert reviewer on a range of PD documents identified during the sampling strategy test. Some adjustments were made during the research process. The most significant adjustment was including PD inquiries into what was originally only the program data collection form. This involved identifying the specific fields in the program form that were also relevant for inquiries. In addition to this change, some minor modifications were also made to accommodate new variables and categories that were developed during the analysis of the data.

The document data collection form has two sections – document details and program details – and is mainly comprised of open ended fields. Although different types of documents (e.g. reports, presentations, audiovisual materials, etc.) had slightly different information available, I decided to keep the document data collection form the same for all types of documents. This approach dramatically simplified the database

design and data entry process, which was very important given the large volume of documents that needed to be processed. I made some minor modifications to the original document data collection form during data collection. For example, I split the source field into separate fields for source, volume / issue number, URL, doi, etc. so that it was easier to sort and search the database.

The program / inquiry data collection form included open ended and multiple choice fields for document sources, program details, steps used in the PD approach, community participation during each step, practical implementation, case study completeness, qualitative results, and quantitative results. The PD steps and community participation sections were based on the PD approach described by Pascale et al. (2010).

In addition to the data collection forms there were also two quality assessment tools, one for quantitative studies (Appendix E) and one for qualitative studies (Appendix F). The tool for quantitative studies is based on the Effective Public Health Practice Project (EPHPP) quality assessment tool for quantitative studies (EPHPP, 2010). This tool was selected because it is relatively short compared to other assessment tools, which is more practical given the very large number of case studies in this analysis. It is also applicable to all types of quantitative evaluation designs, and has been used widely in systematic reviews of quantitative literature (Petticrew & Roberts, 2006). The EPHPP tool was used in conjunction with the EPHPP Dictionary (EPHPP, 2009) which provides definitions and guidance for completing each item. A large number of the gray literature studies contained insufficient information to complete many sections of the tool. Therefore, some minor adjustments were made to allow for the identification of missing

data. This included the addition of *unknown* as a rating in addition to *strong*, *moderate* and *weak*. An evaluation study was classified as having an overall *unknown* level of rigor if there was insufficient information to complete three or more sections of the tool.

The quality assessment tool for qualitative studies is based on the National Health Service (NHS) Critical Appraisal Skills Programme (CASP) quality assessment questions for qualitative studies (NHS CASP, 2006). This tool was selected because it is limited to the 10 most important assessment criteria, making it more concise than many of the other tools available, such as those by Long and Godfrey (2004) which has more than 30 items and Spencer et al (2003) which has 18 items. This was important given the large number of case studies it was be applied to, and the fact that each item requires a yes / no response as well as more extended comments. As with the EPHPP tool, the NHS CASP tool was modified to allow missing data to be identified. A global rating of *strong*, *moderate* or *weak*, was also added using the same approach as the EPHPP tool (EPHPP, 2010) to allow for consistency in the analysis of qualitative and quantitative studies.

Protection of Human Participants

The proposal was approved by the Walden Institutional Review Board (IRB; approval number 10-26-11-0124829). Only publicly available documents were included in the study. No confidential documents, individual patient records or private health information, were assessed as part of the review.

Dissemination of Findings

The primary audiences for this study are community health practitioners working in the field and academics, particularly those who set the content for community health

textbooks, and training programs. Therefore the dissemination strategy will include disseminating the results to practitioners by sending the study to the Positive Deviance Institute for inclusion in their online collection of positive deviance resources. The study will also be submitted for publication in a peer reviewed journal that has an audience of both academics and practitioners.

In conclusion, this study used a multiple case study analysis based on publicly available documentation to help better define the spectrum of PD approaches currently in use, the characteristics of PD programs, and their effectiveness in a range of contexts. Chapter 4 describes the results of the study.

Chapter 4: Results

Sampling and Data Collection

The initial search for the term *positive deviance* using the sources listed in Appendices A and B returned 274 potentially relevant peer reviewed studies and 615 potentially relevant gray literature documents (see Appendix H for search results by database). Of these, 158 peer reviewed studies and 341 gray literature documents were excluded based on their title and abstract. The main reasons for exclusion were that the document only mentioned PD briefly (46 peer reviewed journal articles and 260 gray literature documents), and that the document was not on a health-related topic (104 peer reviewed articles and 53 gray literature documents). Examples of non-health topics included climate change, sociology, and sports psychology. The full text of the remaining 116 peer reviewed studies and 274 gray literature studies were retrieved for further assessment. The largest number of documents were retrieved from the Positive Deviance Initiative website which returned 276 results, 147 of which were retrieved for further analysis, and the USAID website which returned 157 results, 45 of which were retrieved.

Figure 1 summarizes the sampling process. Of the 116 peer reviewed studies and 274 gray literature documents retrieved for further assessment, 47 peer reviewed studies and 107 gray literature documents were excluded based on the full text. The most common reasons for exclusion were that the document discussed the PD approach in general without referring to a specific program (36 peer reviewed articles and 78 gray literature documents) and that the full text could not be located (four peer reviewed journal articles and 21 gray literature documents). The details of the remaining 69 peer

reviewed studies and 167 gray literature documents were entered into the document data collection form.

The first round of within-case analysis involved collecting the documents into groups that described the same programs. This was done by comparing the country, topic, and dates on the documents, and then comparing the title of the program they described and the name of the organization implementing the program. Using this method the first round of within-case analysis identified 91 individual PD programs described using 236 documents. At this point an additional 19 gray literature documents were identified describing the PD programs. These were found by searching Google for the names of the programs.

A more detailed analysis of each program was conducted when I entered the data from the relevant documents into the program data collection form. During this process I excluded 17 programs as there were not enough data available to complete 80% of the form. In addition, 26 of the individual programs were actually part of the same larger program and so they were combined together. Programs were considered to be part of the same larger program if they were run in the same location, on the same topic, and by the same organization or donor.

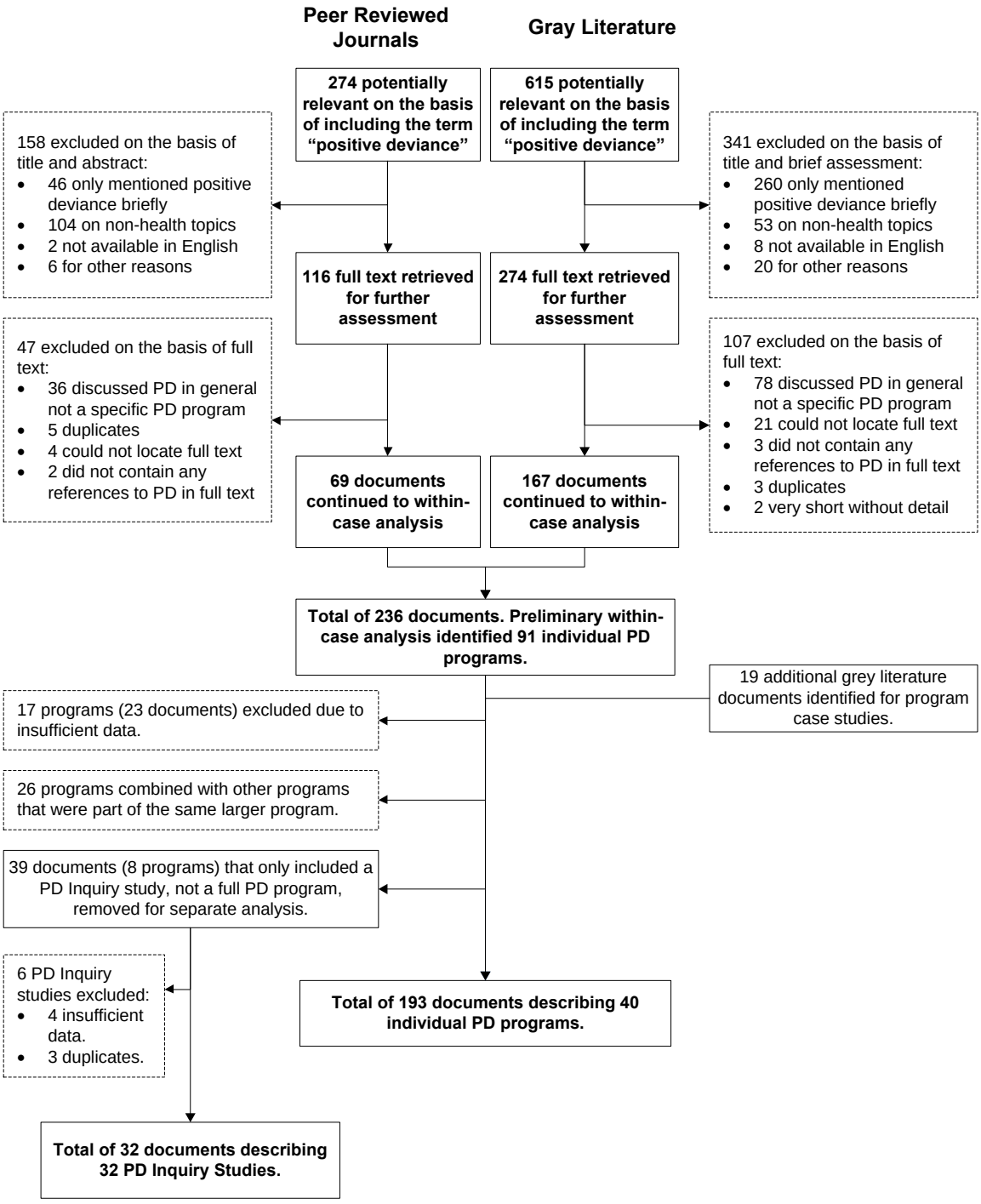

Figure 1. Sampling process.

There were four large programs which contained a significant number of subprograms. The first was the child nutrition program implemented by Save the Children in Vietnam. Save the Children implemented various versions of their program in Vietnam from 1990 to 2007. Rather than treating each individual variation as a separate program, they were all treated as one ongoing program. A similar program was implemented on child nutrition in Indonesia. In this program multiple different NGOs received funding from USAID to implement the PD approach to reduce child malnutrition. All the NGOs followed a similar approach, and all were included in the final evaluation report for USAID. Therefore, all of them were considered to be part of one larger program. The third large program was on child nutrition in India. A large number of PD programs were identified in India, being run by a range of different NGOs. However, all programs were being implemented as part of the government run Integrated Child Development Services (ICDS), which was considered to be one overarching program. Finally, six hospital based PD programs for preventing hospital acquired infections were all part of the same pilot program implemented using a grant from the Robert Wood Johnson Foundation. Because all the hospitals were included in the final evaluation report, all were considered to be part of one larger program.

Combining multiple subprograms into one larger program was necessary for practical reasons, as counting each individual subprogram separately would have made the data more difficult to analyze and interpret. However, combing the subprograms does have some limitations. Individual subprograms, particularly in India, had a wide range of variations in context, setting, and approach, which cannot be fully explored when they are

grouped together as a single program.

While completing the program data collection forms, I also found that a significant number of the programs were not actually programs, but studies. They only included the results of a PD inquiry to identify positive deviant behaviors but did not spread these behaviors to other people as part of a program. I decided to extract these PD inquiries from the set of programs so they could be analyzed separately. Hereafter these case studies are referred to as PD inquiries, as distinct from PD programs. Only some of the fields in the original program data collection form were relevant for these studies, and so I modified the form slightly to identify those fields that were relevant for PD inquiries. Of the PD inquiries, four had to be excluded due to insufficient data, and three were excluded because they reported on the results of the same study, just in different formats (e.g., a poster and peer reviewed journal article).

The final result of the sampling process was 40 PD program case studies described by 193 documents, and 32 PD inquiries described by 32 documents. Table 1 summarizes the types of documents used to describe them. The most common types of documents describing PD programs were program reports (54 documents) and peer reviewed journal articles (39 documents). However, there was a wide range of other document types, including videos, webpages, training manuals, and presentations. PD inquiries were more likely to be described in a peer reviewed journal, with 25 (78%) of all PD inquiries being research studies that were published as a journal article. Appendix I provides details of all PD programs and PD inquiries included in the final sample, including the number and types of documents related to each case study.

Table 1

Type of Documents Describing PD Programs and PD Inquiries

Document type	No. documents describing	
	PD programs	PD inquiries
Peer Reviewed Journal Article	39	25
Program Report	54	3
Video	25	
Periodical Article	16	
Webpage	17	1
Manual/Training Materials	13	
Presentation	14	
Book	10	
News Article	3	
Poster	1	1
Thesis/Dissertation	1	2
Total	194	32

Data Management

All document data collection forms and program / inquiry data collection forms were entered into a Microsoft Access Database with a unique identification number. The database was relational, with each program / inquiry data collection form being linked to multiple document data collection forms through the unique identifying numbers. Examples of completed forms are shown in Appendix J. A backup of the database was kept at all times.

Findings

Research Question 1

Topics. Table 2 shows the range of topics addressed by the PD programs and PD inquiries identified. The most common area in which the PD approach has been used is

child nutrition, with a total of 20 PD programs (50%) and 18 PD inquiries (56%). All child nutrition programs were related to malnutrition rather than overnutrition, overweight, or obesity. The next most common topic was hospital acquired infections with a total of six PD programs (15%). There were several topics where only one or two programs and/or inquiries have been identified. These included topics such as smoking and chronic diseases.

Table 2

PD Programs and PD Inquiries by Topic

Topic	**No. PD Programs**	**No. PD Inquiries**
Child nutrition	20	18
Hospital acquired infections	6	
Pregnancy outcomes	4	3
Child trafficking and soldiers	2	
Health services	2	2
School education	2	
Female Genital Mutilation	1	
HIV/AIDS and reproductive health	1	4
Prisoner wellbeing	1	
Smoking	1	
Diet and weight control		3
Gender Equity		1
Chronic diseases		1

Settings. There are two parts to the issue of setting. The first is the type of country in which PD programs and inquiries are being conducted, including the geographic location and socioeconomic status. The other is the specific setting within the country, such as urban communities, rural communities, institutional settings, and so

forth. Table 3 shows the number of PD programs and inquiries conducted in each geographic region. The largest numbers of PD programs have been conducted in Sub-Saharan Africa (a total of 18 PD programs and PD inquiries) with the next largest number in South Asia (15), North America (12), East Asia and Pacific (11), and Latin America and the Caribbean (10). Very few PD programs or PD inquiries have been conducted in Western Europe, Eastern Europe and Central Asia, or the Middle East and North Africa.

Table 3

Number of PD Programs and PD Inquiries by Geographic Region

Region	# PD programs	# PD Inquiries	Total
East Asia & Pacific	5	6	11
Eastern Europe & Central Asia	1		1
Latin America & Caribbean	5	5	10
Middle East & North Africa	2	1	3
North America	4	8	12
South Asia	6	9	15
Sub-Saharan Africa	15	3	18
Western Europe	2		2

*Figure **2*** shows the percentage of PD programs and inquiries by the income level of the country according to the World Bank (2011). Low income countries included Afghanistan, Bangladesh, Ethiopia, and Haiti. Middle income countries included China, Egypt, India, and Brazil. High income countries included the United States, United Kingdom, Denmark, and Australia. The majority of PD programs and PD inquiries have been conducted in low income countries (45% of PD programs and 13% of PD inquiries) and middle income countries (38% of PD programs and 61% of PD inquiries). Relatively few have been conducted in high income countries.

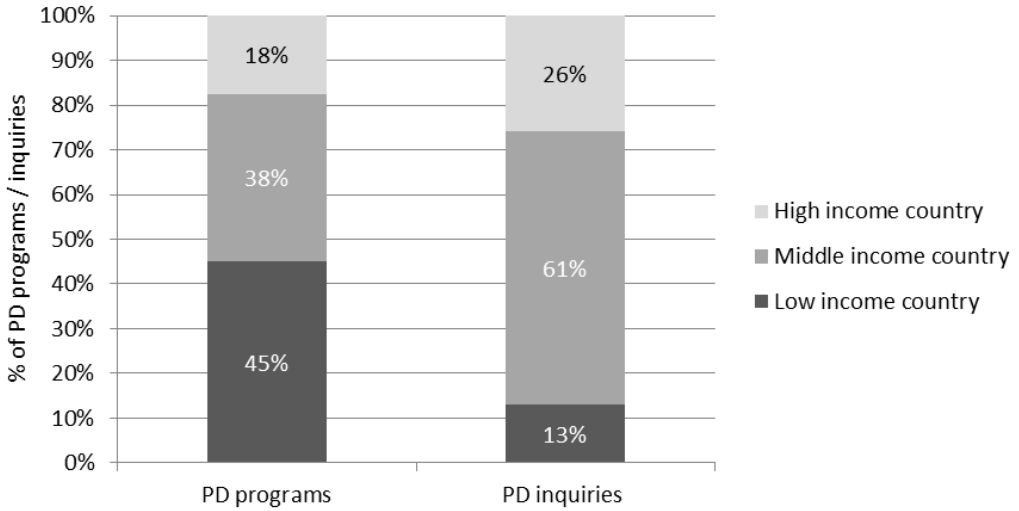

Figure 2. Percentage of PD programs and PD inquiries conducted in low, middle and high income countries

*Figure **3*** shows the percentage of PD programs and inquiries conducted in various settings. The largest number of PD programs and inquiries were conducted in rural communities (60% of PD programs and 46% of PD inquiries) followed by urban communities (11% of PD programs and 41% of PD inquiries). This was followed by hospitals, which were the setting for 18% of PD programs and 8% of PD inquiries. A small number of PD programs were set in schools and prisons.

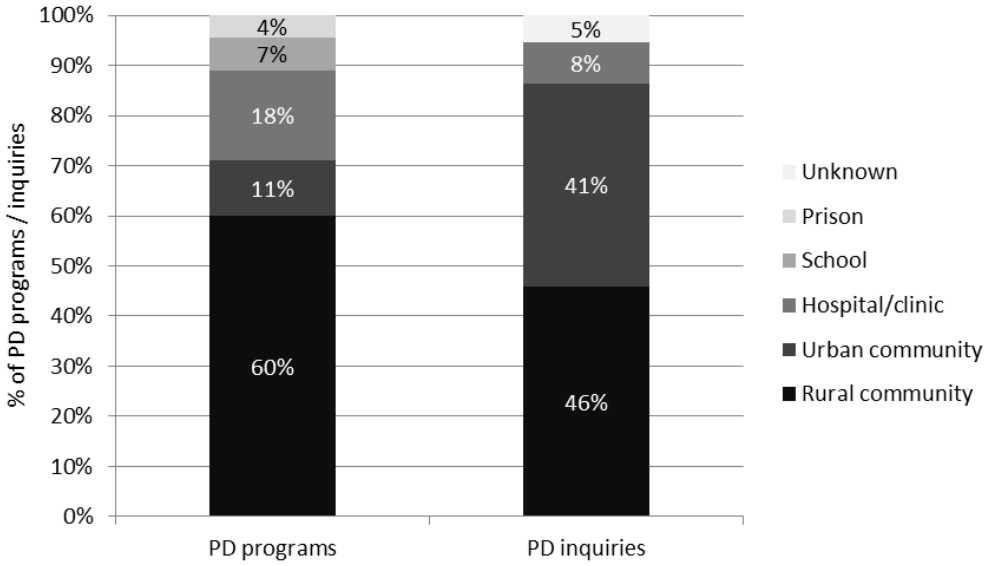

Figure 3. Percentage of PD programs and inquiries conducted in various settings

Scale. The majority of PD programs and inquiries were relatively small. Of the 40 programs, fifteen had an unknown number of participants, four had less than 100 participants, 13 had hundreds of participants, five had thousands of participants, one had tens of thousands of participants, and only two had more than 100,000 participants. The largest single program was a child nutrition program in India that was comprised of many loosely connected subprograms. All the subprograms were linked with the government run Integrated Child Development Services program. Although it is difficult to calculate the total participation, it is likely that together these many subprograms covered millions of children in India, making it the largest implementation of the PD approach.

Types of organizations. Data on the type of organization was only available for PD programs, as the majority of PD inquiries were published as peer reviewed journal articles which did not clearly identify the organizations involved.

Of the 40 PD programs, 32 (80%) had an international organization involved in

implementation. The most common international organizations involved in PD programs were USAID, which was listed as a donor for 16 (40%) of the PD programs, and Save the Children which was listed as an implementing agency for 10 (25%) of the PD programs. The only programs that did not involve an international organization were those implemented in high income countries (e.g. United States, Australia), with the exception of one program in Pakistan on medical education. Out of the 40 PD programs, 18 (45%) involved a national organization, such as a local NGO or university in the implementation, and 21 (53%) involved the government at either national or subnational level. However, it is important to note that national or government partners may have been involved in the implementation of some programs without being mentioned in the program documentation or reports.

PD steps. Thirty nine (98%) of the 40 PD programs implemented all PD steps defined by Pascale et al. (2010) in some way, including defining the problem, determining whether positive deviants existed, discovering PD behaviors, designing the program, implementing the program, and monitoring the program. However, not all of them implemented the steps exactly as Pascale et al. describe. For example, Pascale et al. stated that PD programs should use action learning to spread the PD behaviors to others. Some PD programs used other methods to spread the behaviors, such as mass media campaigns, which did not specifically include action learning. This is discussed further in the following section on the classification of PD approaches. There was one PD program which did not include any description of the steps followed for implementation.

By definition, a PD inquiry included the first three steps only: defining the

problem, determining whether positive deviants existing, and discovering their unique practices. Of the 32 PD inquiries, all 32 (100%) defined the problem, 31 (97%) identified positive deviants, and 29 (91%) attempted to discover positive deviant behaviors. However, not all of them implemented the steps exactly as Pascale et al. describe. For example, Pascale et al. state that the discovery of PD behaviors should happen through open-ended inquiry and observation that allows for the discovery of new behaviors that the researcher may not have previously considered. However, some PD inquires used only quantitative data analysis to identify the PD behaviors. This means that all the data was collected using a predefined survey instrument, and there was no opportunity to identify new behaviors that the researcher may not have considered when they were designing the survey. This issue is also discussed further in the following section on the classification of PD approaches. Only one PD inquiry reported eliminating true but useless behaviors and only five PD programs reported doing this.

Positive deviant behaviors identified. Each PD program and inquiry identified different behaviors practiced by positive deviants, although they were not always described in detail, particularly in the reports of PD programs. Table 4 shows examples of positive deviant behaviors identified by a range of programs and inquiries.

In some cases the PD behaviors identified were new to both community members and program staff. For example, collecting shrimp from the rice paddies and combining with the green tops of sweet potatoes to make nutritious baby food, was not something that the program staff working in Vietnam had considered before, nor was it a common practice in the community. It was only the positive deviants who were practicing this

behavior and so it could be considered a new behavior that had been discovered through the PD inquiry.

In other cases the PD behaviors identified were new to the community members, but were not new to program staff. For example, in Pakistan community members were surprised to discover that positive deviants with good pregnancy outcomes also had regular antenatal visits, and increased their food intake during pregnancy. This "discovery" was not new to the program staff, who already knew from their public health training that regular antenatal visits and nutrition are linked to good pregnancy outcomes.

In other cases the PD behaviors were well known by community members, but were new to the program staff. For example, hiding condoms in the storage space of motorcycles so their wives could not find them was a common strategy used by moto-taxi drivers in Indonesia, but it was new for the researchers who "discovered" it during a PD inquiry.

Finally, there were some cases where the PD behaviors were not new to community members or program staff. For example, PD child soldiers in Uganda were considered to be girls who worked harder and longer than others, and who attended school. These behaviors were already known to be positive by both community members and program staff before the PD inquiry was conducted, and so they could not be considered new behaviors that had been discovered.

Unfortunately due to incomplete reporting of PD program and inquiry results it was not possible to calculate the total number and type of PD behaviors identified across all the case studies. The majority of documents and journal articles only gave examples

of the PD behaviors identified without categorically listing and classifying them.

Table 4

Examples of Positive Deviant Behaviors Identified

Topic	Country	Examples of PD behaviors identified	Behaviors were new for
Child nutrition	Vietnam	Collecting shrimp from the rice paddies and combining with the green tops of sweet potatoes to make nutritious baby food.	Community members and program staff
Pregnancy outcomes	Pakistan	Going for antenatal consultation and tetanus toxoid injection; increasing food intake during pregnancy; giving the birth attendant a clean blade; insisting that nothing be applied on the umbilical cord after it was cut and tied.	Community members
HIV/AIDS and reproductive health	Indonesia	Hiding condoms in the storage space of the motorcycle; hiding condom in one's underwear; if caught by his wife with condoms, he says that he was approached in the street by population promoters who gave them to him, and he didn't have time to refuse.	Program staff
Child soldiers	Uganda	Working longer and harder than others; respecting aunts, parents, and community elders; attending school and performing well.	No one
Health services	United Kingdom	Cross-referencing records within the database to speed up data entry time.	Health service staff and management
Prisons	Denmark	Offering inmates a tour of the prison instead of a formal interview; inviting inmates on parole for supper in the prison and eating together with the guards.	Prison staff and management

Community Participation. According to Pascale et al. (2010), community participation should be incorporated into every step of the PD process. During the analysis I attempted to rate the PD programs and inquiries using a scale of community participation similar to that developed by Arnstein (1969). However, this proved to be extremely difficult, as the majority of PD program and PD inquiry reports did not include a description of the community participation process – only whether or not community

participation had occurred. Therefore, I had to limit the analysis to identifying whether or not any type of community participation had occurred at all. A case study was marked as including community participation if it described any type of participation process, including community consultation meetings, community volunteers, community members helping to implement activities, etc. In order to be considered participatory, the community members had to be involved in the implementation of the program or inquiry, not just be participants in it. For example, a PD inquiry was not considered participatory if the researchers simply interviewed community members as subjects in the study, but it was considered participatory if community volunteers worked with the researchers to conduct the interviews.

Even with this very broad definition of community participation, only four (10%) PD programs included community participation during all PD steps. This included one program related to child nutrition, one related to health services, one related to school education, and one related to child sex trafficking. Three PD programs did not include participation during any step. This included one program related to child nutrition, one related to hospital acquired infections, and one related to reproductive health. Figure 4 shows the percentage of PD programs that included community participation in each step of the process. The lowest level of community participation was found during the first step to define the problem, with only five PD programs (13%) describing community participation during this step. The remainder of the programs either did not describe any community participation, and so the level of participation is unknown, or stated that people other than community members defined the problem.

Community members were involved in determining the existence of positive deviants, discovering their behaviors and designing the program in 23 (58%), 25 (63%) and 26 (65%) PD programs respectively. The step with the highest level of participation was implementation of the program, with 34 PD programs (85%) including the community in this step. In most cases participation it this step involved the positive deviants or other community volunteers spreading the positive deviant behaviors to people in their community. However, only 21 (53%) of PD programs involved the same community members in monitoring the success of the program. In most cases community involvement in the monitoring step involved community members or volunteers measuring the direct outcome of the program, such weighing children to determine if they were gaining weight from a PD child nutrition intervention.

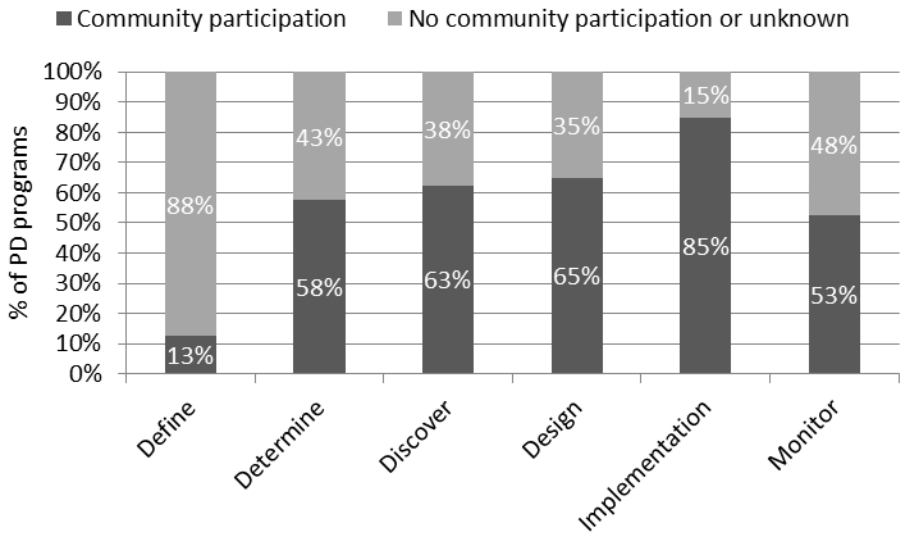

Figure 4. Percentage of PD programs that included community participation in each PD step

Table 5 gives examples of three PD programs with high, medium, and low levels of participation. High participation was defined as involving the community in all steps, moderate was defined as involving the community in one to five steps, while low was defined as not involving the community in any step. The first program on child nutrition in Guinea included community members in all PD steps. Child nutrition was identified as a problem by community members, PD mothers were identified by community volunteers who worked together with program staff to discover PD behaviors, design, implement, and monitor the program. The second program on pregnancy outcomes in Egypt only included community members during the implementation of the program. Program staff identified pregnancy outcomes as a problem in the community, they conducted the PD inquiry to identify PD mothers, discover their behaviors, and design education sessions. They invited the PD women and community volunteers to help implement the education sessions, but did not involve them in the ongoing monitoring of the program. The third program on reproductive health in Cote d'Ivoire did not include community members at any stage of the process. The program staff identified reproductive health as an issue, conducted their own PD inquiry, and designed a mass media campaign, which they then implemented and monitored.

Table 5

Comparison of Three PD Programs with Different Levels of Community Participation

PD Step	Overall level of community participation		
	High *(Child Nutrition, Guinea)*	Moderate *(Pregnancy Outcomes, Egypt)*	Low / None *(Reproductive Health, Cote d'Ivoire)*
Define	Child nutrition was identified as a high priority issue by community members	Pregnancy outcomes were identified as a high priority issue by program staff	Reproductive health for young people was identified as a high priority issue by program staff
Determine	PD mothers were identified by community volunteers	PD women were identified by program staff based on measurements taken at the health centre	PD young people were identified by program staff with assistance from local NGOs
Discover	PD mothers and community volunteers discovered PD behaviors with assistance from program staff	Program staff discovered PD behaviors by interviewing the PD women they had identified	Program staff discovered PD behaviors by designing a survey based on interviews and administering the survey to a large number of young people
Design	PD mothers and community volunteers designed educational sessions with assistance from program staff	Program staff designed education sessions based on the PD behaviors they had identified	Program staff designed a mass media campaign based on the PD behaviors they had identified
Implementation	PD mothers and community volunteers implemented educational sessions to teach the PD behaviors to other mothers with malnourished children. Both mothers and fathers contributed food and resources to the educational sessions	PD women and community health workers implemented educational sessions to teach the PD behaviors to other pregnant women in the community	Program staff implemented the mass media campaign
Monitor	PD mothers and community volunteers regularly weighed the children to assess the effectiveness of the program	Program staff and health centre staff conducted monitoring to assess the effectiveness of the program	Program staff conducted monitoring surveys to assess the effectiveness of the program

While the majority of PD programs included community participation in at least some parts of the PD process, the same is not true for PD inquiries. Thirty (94%) of PD inquiries did not describe community participation at any stage of the process (see *Figure **5***).

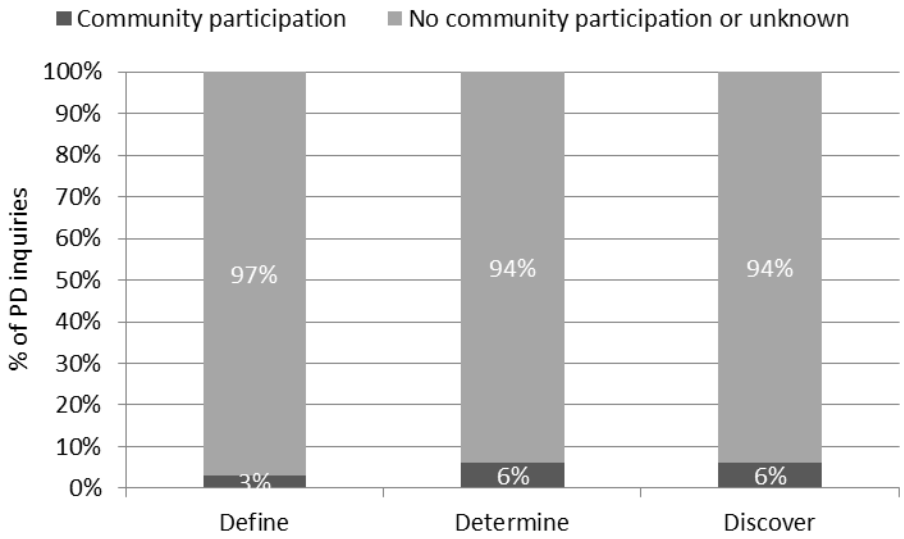

Figure 5. Percentage of PD inquiries that included community participation in each PD step

Integration. Figure 6 shows 32 PD programs (80%) were part of a larger integrated program that included a range of different activities, of which PD was only one part. For example, the PD child nutrition program in India is only one part of the government run Integrated Child Development Services which includes a wide range of activities to support early childhood development, including immunization, health checks, referral services, preschools, health education, and nutrition. Another example of PD being incorporated into a larger integrated program is a hospital acquired infection prevention program implemented at the Veterans Affairs Medical Center in the United States. The PD approach was part of a bundle of interventions implemented at the

hospital, which also included nasal screening of patients, isolation of positive patients, and standardization of hand hygiene.

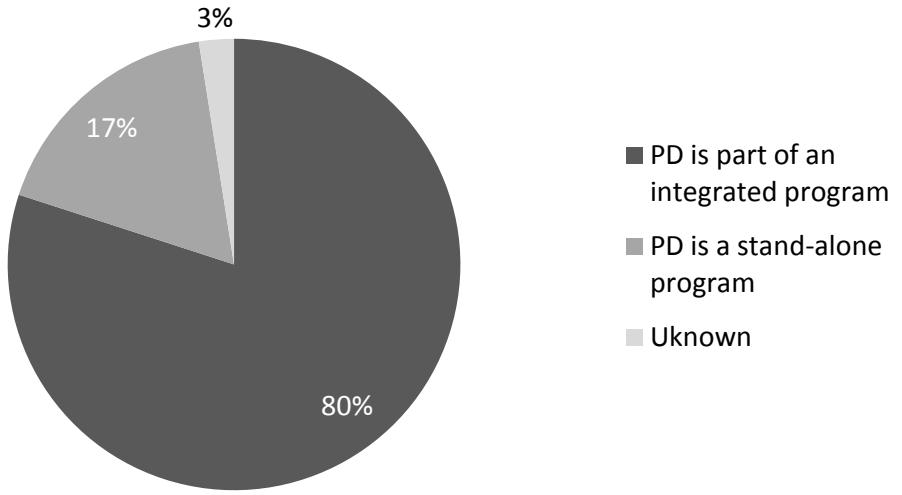

Figure 6. Percentage of PD programs that were integrated with other program activities or run as stand-alone programs

The question of integration is not relevant for PD inquiries, as they do not involve implementing any type of program. Some integrated programs included specific actions aimed at institutionalizing PD to increase the chance that it would continue to be implemented after the program finished. In community settings this included training local government and community workers on the approach, so they could continue to implement it. For organizationally based programs at hospitals, schools, and prisons this included securing management support and including PD in the routine policies and practices of the organization.

Research Question 2

Chronological diffusion. Figure 7 is a timeline of the PD programs and PD inquiries, while Figure 8 shows the number of new programs and inquiries that started each year. These two figures illustrate how the PD approach spread to different countries and topics. From Figure 7 it is clear that the PD approach was first proposed in the 1970s for child nutrition, but was not implemented for another 1.5 decades at the start of the 1990s. During the 1990s one to two PD programs and inquiries were implemented each year. These were mainly on child nutrition, although there was one PD inquiry related to health services in 1995, and one PD program related to female genital mutilation that started in 1998. The early 2000s were similar, with most programs on child nutrition. There was one PD inquiry on gender equity in 2000 and one HIV/AIDS program that started in 2001.

The year 2002 appears to mark a change in this trend. More programs and inquiries were published on PD in 2002 than in any previous year. This is due to the publication of a special supplement in the Food & Nutrition Journal focusing only on PD. After the 2002 publications a larger number of PD programs and inquiries have been run each year on an increasingly broad range of topics. The first programs on pregnancy outcomes started in 2002, child trafficking and schools started in 2003, hospital acquired infections in 2005, and smoking in 2006. The last three years, from 2009 to 2011 saw the expansion of PD into even more new areas, including diet and weight control, prisoner wellbeing, and chronic diseases.

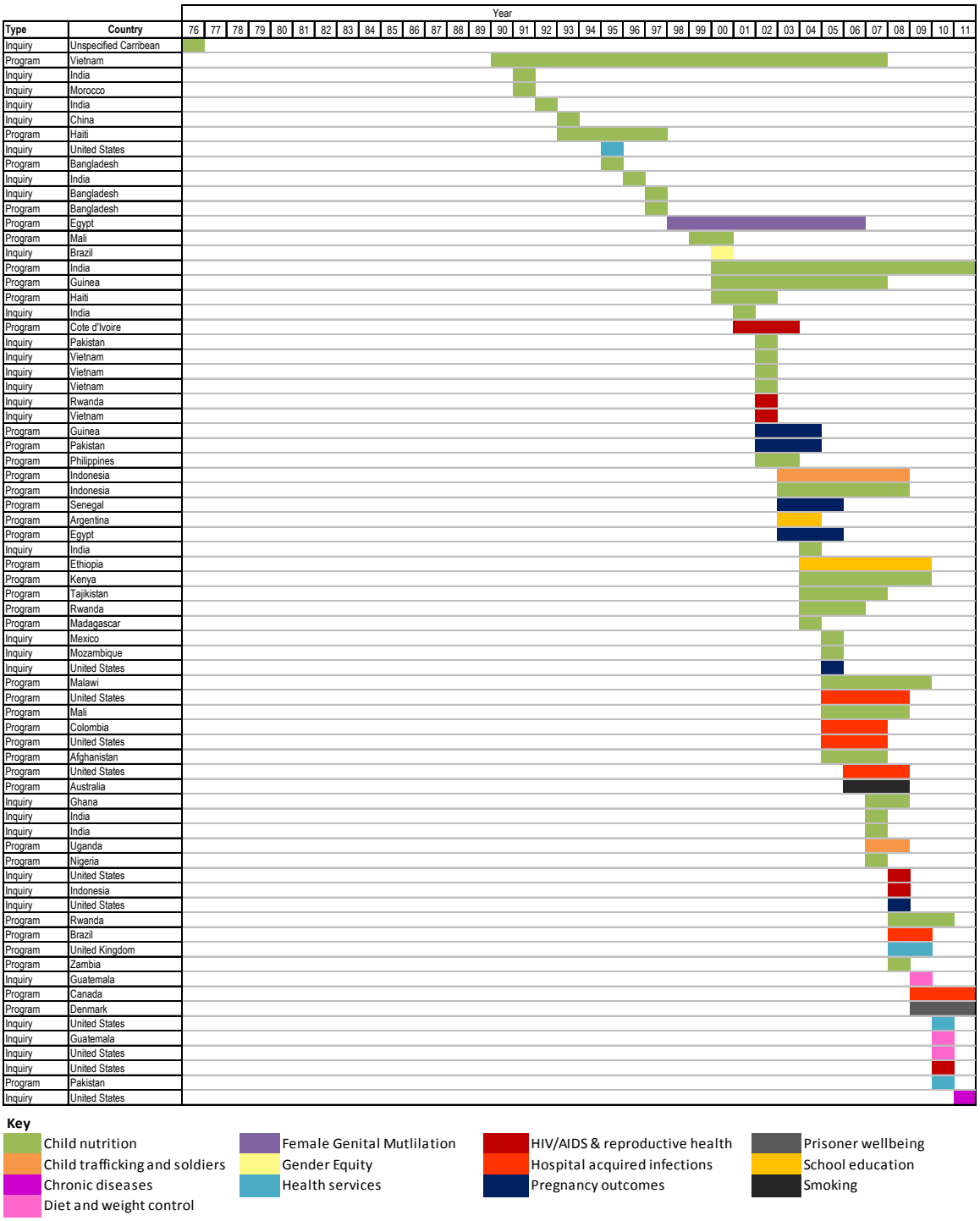

Figure 7. Timeline of PD programs and PD inquiries

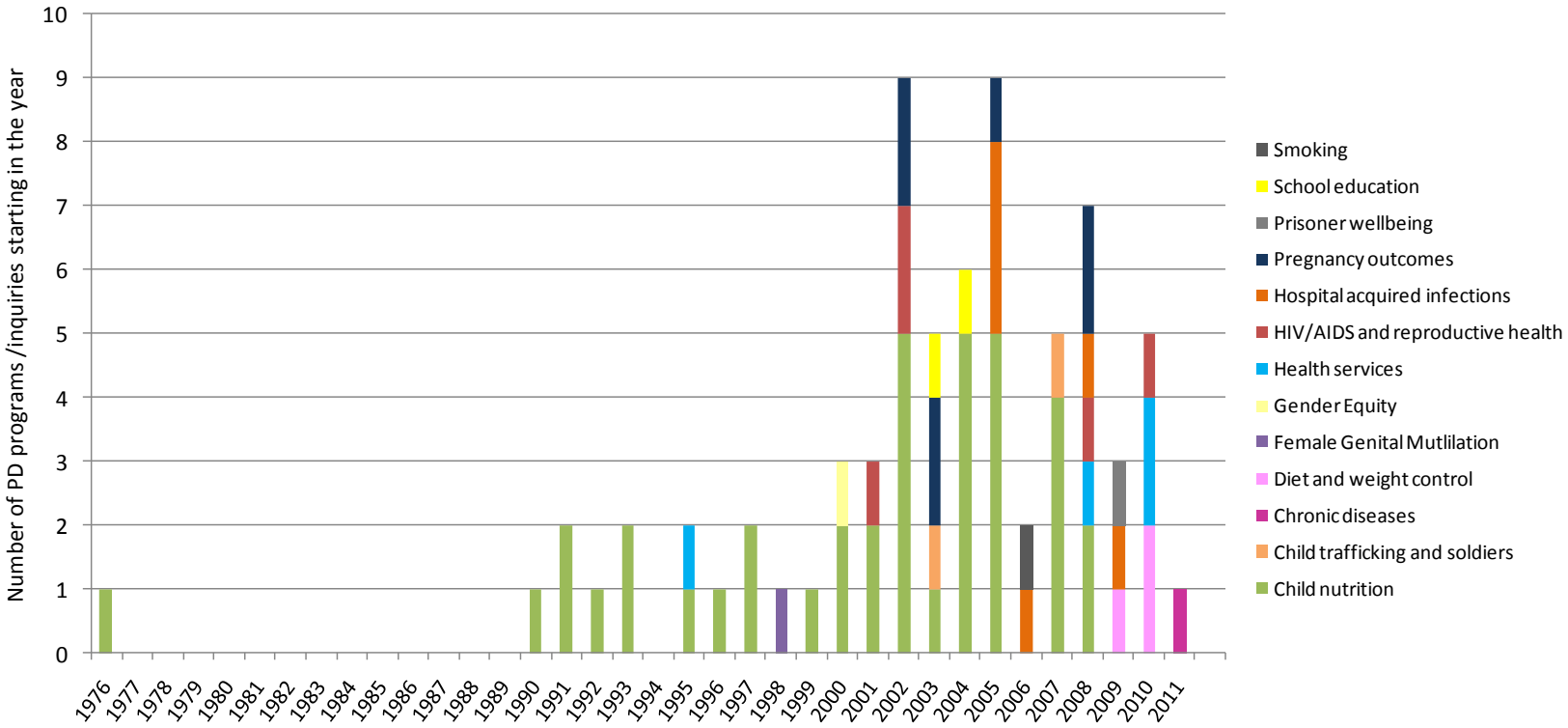

Figure 8. Number and topic of PD programs/inquiries starting each year

Geographic diffusion. In terms of geography, the PD approach started almost exclusively in low and middle income countries, on a range of different continents. Vietnam appears to be a key country, as it was the first major implementation of the approach in the field of child nutrition, and has the longest running program. One study was conducted in the U.S. in 1995 on nutrition and hemodialysis in a healthcare setting. However, the PD approach did not really diffuse to the U.S. or other developed countries until it was first used for hospital acquired infections in 2005. After 2005 the PD approach was used multiple times in the U.S., and at least once each in Canada, Australia, and Denmark.

Topic diffusion. From a topic perspective, the PD approach started in child nutrition, with a significant number of projects being implemented in this area from the 1990s until 2011. Despite its wide application to child malnutrition in low and middle income countries, no case studies were identified which applied the PD approach to child overnutrition / obesity in high or middle income countries.

Other topics outside nutrition have been applied a few times at most, with the exception of hospital acquired infections which has a larger number of programs. There have been no further applications of PD to female genital mutilation, despite an extensive project being implemented in Egypt from 1998 – 2006. There have also been no further applications to child trafficking and soldiers despite two programs being implemented in the area, starting in the early 2000s.

Diffusion actors. The theory of diffusion of innovations identifies different groups based on how quickly they adopt a new idea. Innovators are those who create the

new idea, early adopters are those who are first to adopt it in a population, early majority are the large group of people who adopt it after the early adopters, late majority are the group who adopt it after the early majority, and laggards are those who resist adopting the new idea (Rogers, 1995).

For the PD approach Jerry and Monique Sternin could be considered the primary innovators. While they did not coin the term positive deviance, they did implement the first large scale PD program and are directly or indirectly (through Save the Children) linked to at least 15 PD programs and five PD inquiries. This includes at least eight occasions when PD was applied to a new topic for the first time, such as the first large scale implementation for child nutrition (Vietnam, 1990-2007), the first applications to female genital mutilation (Egypt, 1998-2006), pregnancy outcomes (Pakistan, 2002-2004), HIV/AIDS (Indonesia, 2002), school education (Argentina, 2003-2004), trafficking (Indonesia, 2003-2008), hospital acquired infections (United States, 2005-2007) and prisoner and guard wellbeing (Denmark, 2009-2011).

The individuals and organizations who adopted the PD approach after seeing one of Jerry and Monique Sternin's early programs could be considered early adopters, and those that followed them early majority. For child nutrition, the PD approach has spread from the innovators (the Sternins) to other early adopters in USAID and Save the Children, and now appears to be spreading through other international development organizations to become a relatively well established approach. PD in hospital acquired infections was also started by Jerry Sternin, and quickly spread to other early adopter hospitals via the Plexus Institute. If this diffusion continues the PD approach for hospital

acquired infections may spread to the early majority, bringing it closer to becoming a mainstream approach.

By comparison, the application of PD to other topics in most cases has only spread from the innovators to a small number of early adopters (e.g. pregnancy outcomes, school education, HIV/AIDS, and reproductive health). In some cases the approach has not spread at all past the first implementation (e.g. female genital mutilation).

One factor which may have affected the speed of diffusion is the locations where the PD programs and inquiries were published. The fact that the majority of PD programs were only described in internal program documents may have slowed the diffusion of the PD approach significantly, as the only people who normally read internal program reports are the program staff and donors. Once a large number of programs were published in the Food and Nutrition Bulletin in 2002 the rate of diffusion increased. The rate of diffusion may also have been increased by the Positive Deviance Initiative (2010e) website which aggregates a range of peer reviewed and gray literature on PD, and promotes the approach for a range of topics.

Diffusion criteria. Theory of diffusion of innovations describes characteristics of innovations that make them more likely to spread quickly. This includes the relative advantage compared to other solutions, the compatibility with existing practices and cultures, the complexity, the ease with which the innovation can be trialed, and how easily the results can be observed (Rogers, 1995).

The two areas where PD appears to have spread more rapidly - child nutrition and hospital acquired infections - are both areas where applying the PD approach meets

several of the criteria required for diffusion. The reports from PD programs in child nutrition and hospital acquired infections show that the results are immediate and easily observed. For child nutrition programs children put on weight, and in hospital programs the rate of hospital acquired infections goes down. In both these cases, according to reports from PD programs, the PD approach is easy to trial and does not require too many resources. It is simple to implement and it is compatible with the desires and culture of the majority of people. Because the results of the programs can be easily observed and compared to other programs the relative advantage of the PD approach in these areas is easy to see.

Some areas where the PD approach appears to have been used once or twice and never again (e.g. female genital mutilation, trafficking, child soldiers) do not meet the same criteria for diffusion. For example, the results are not able to be immediately observed and the issues are complex so the PD approach may not be easy to implement. In the case of female genital mutilation, the PD approach is also not compatible with the local culture. For example, the program evaluation reported many "dissident voices who consider an intervention against FGM/C as a 'Western conspiracy' against Egyptian traditions and values" (Population Council, 2008, p.6). As a result, positive deviants were not celebrated by the community in the same way as they were in other programs. Because of this, the relative advantage of the PD approach over other approaches may not have been as apparent compared to child nutrition and hospital acquired infections and so this may have slowed or stopped the diffusion of the PD approach in these areas.

Research Question 3

The peer debriefer and I used qualitative analysis and discussion to develop a typology of PD approaches in order to address Research Question 3. This process involved reviewing the case studies of PD programs and inquiries to look at the different ways in which they could be grouped. Initially we decided to group them by the methodology used to identify positive deviants and their behaviors (qualitative, quantitative, mixed-methods, etc). However, after trying to apply these categories to the case studies we found that it was necessary to separate the methodologies for three different steps - identifying the positive deviants, discovering their behaviors, and spreading those behaviors to others. In parallel to this we tried grouping the PD programs and inquiries by topic. The first grouping resulted in the classifications of child nutrition, adult health, organizational, and socio cultural. Eventually, through several rounds of discussion, we decided to modify these groups so they aligned with the levels of intervention seen in many public health frameworks - that is, individual, organizational / institutional and social / cultural. See Appendix G for the minutes of these discussions.

The final conclusion after extensive discussion and analysis was that there are four factors to consider when categorizing the exiting PD approaches: the level of intervention, the method used to identify positive deviants, the method used to determine their positive deviant behaviors, and the method used to spread the behaviors to others. Each case study uses a different combination of the four factors, although some combinations are more common than others.

Level of intervention. The case studies of PD programs and inquiries were

grouped into those that apply the PD approach to individual behavior change, those that apply it to organizational or institutional change, and those that apply it to social or cultural change. These levels are common in public health, and are often portrayed as concentric circles or layers similar to *Figure 9*.

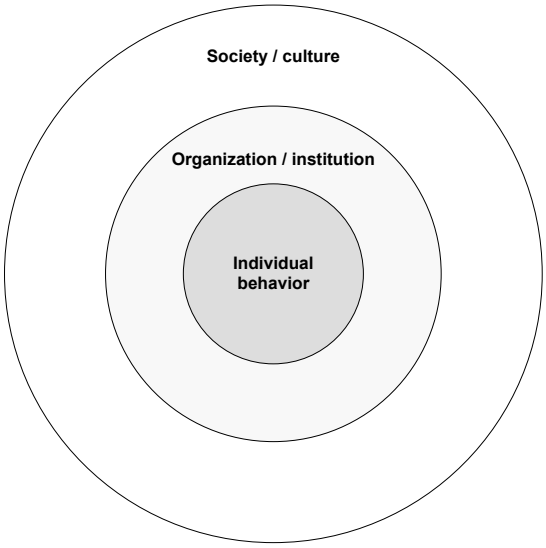

Figure 9. Levels of intervention

Out of the 40 PD programs in the sample, 26 (65%) were related to individual behavior change, and out of the 32 PD inquiries, 29 (91%) were related to individual behavior change. This includes 20 programs and 18 inquiries related to child nutrition, and six programs and 11 inquiries related to other health behaviors, including chronic diseases, diet and weight control, HIV/AIDS and reproductive health, pregnancy outcomes, and smoking.

There were 11 PD programs (28%) and two PD inquiries (6%) related to organizational or institutional change. This included programs and inquiries related to school retention, prisoner and guard wellbeing, health services, and hospital acquired

infections. All these programs and inquiries were in organizational / institutional settings (schools, hospitals, and prisons), and the focus was to achieve changes at the organizational level, even if this was related to the behavior of individuals.

There were three PD programs (8%) and one PD inquiry (3%) related to social or cultural change. This included those related to child trafficking, child soldiers, female genital mutilation, and gender equity. Although these programs may have included changing the behavior of particular individuals (e.g. returned child soldiers, parents of girls at risk of circumcision or trafficking) the overall aim was to change the sociocultural practices at the community level. Table 6 shows the number of PD programs and inquiries for each topic, and at each level of intervention.

Table 6

Number of PD Programs and Inquiries for Each Topic and Level of Intervention

Level of intervention	Topic	# PD programs	# PD inquiries	Total
Individual behavior	Child nutrition	20	18	38
	Chronic diseases		1	1
	Diet and weight control		3	3
	HIV/AIDS and reproductive health	1	4	5
	Pregnancy outcomes	4	3	7
	Smoking	1		1
	Total	20	18	38
Organizational / institutional	Health services	2	2	4
	Hospital acquired infections	6		6
	Prisoner wellbeing	1		1
	School education	2		2
	Total	11	2	13
Social / cultural	Child trafficking and soldiers	2		2
	Female Genital Mutilation	1		1
	Gender Equity		1	1
	Total	3	1	4

Figure 10 shows the timeline of PD programs and inquiries grouped by the level of intervention. It is clear that PD first started at the individual behavior change level in child nutrition, and has only spread to other individual behavior change topics since 2000. With the exception of one early study on health services in 1995, PD has only been applied to organizational / institutional level change since 2003, when it was first applied in a school setting. PD was first applied to social / cultural change in 1998 but has not spread to a large number of programs in that area.

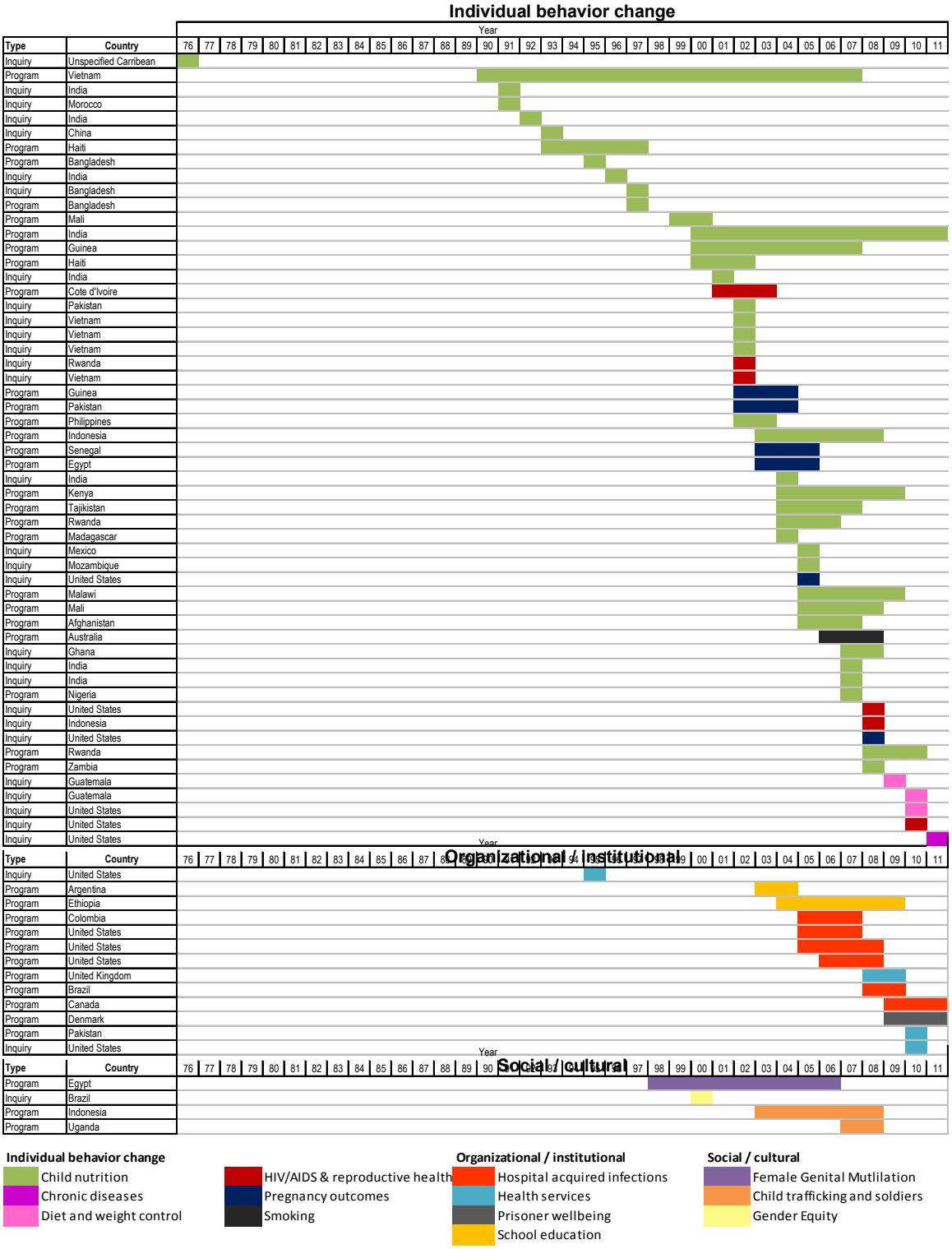

Figure 10. Timeline of PD programs and PD inquiries grouped by level of intervention

Method used to identify positive deviants. After the level of intervention, the next factor used to classify PD approach was the method used to identify positive deviants. Four different methods have been used to identify positive deviants in the PD case studies. The most common method was quantitative screening in which participants are assessed against specific quantitative criteria to determine whether they are positive deviants. For example, in the case of child nutrition programs, children are weighed and measured, and the socioeconomic status of their family is assessed. Those who are growing normally despite having low socioeconomic status are considered positive deviants. This was the most common approach overall, particularly for programs and inquiries addressing issues of individual behavior change. Twenty five (66%) of child nutrition programs and inquiries used this approach, and 34 (67%) of all individual behavior change programs and inquiries used it.

The next most common method used to identify positive deviants is individual choice or convenience sampling. Using this approach, a key informant such as the village chief or health worker is asked to identify individuals or families who they believe are positive deviants. Two (50%) programs and inquiries addressing social / cultural issues used this approach, as did 3 (30%) of the programs and inquiries addressing organizational / institutional issues.

Some programs use a more rigorous qualitative screening to identify positive deviants. This is more systematic than individual choice or convenience sampling. For example, in some case studies large numbers of interviews were conducted with members from the target group and systematically analyzed to identify positive deviants. This is a

relatively uncommon method, only used by five (7%) of all programs.

Finally, six (50%) of the programs that addressed organizational / institutional level changes used staff meetings as the method for identifying positive deviants. Staff would meet to discuss who among the staff could be considered a positive deviant based on their performance (e.g. having a high student retention rate).

Method used to discover positive deviant behaviors. Four different methods have been used to discover the unique behaviors of positive deviants once they have been identified. The most common method, used in 50 (75%) of PD programs and inquiries, was a qualitative inquiry using interviews, focus groups, and/or observations of the positive deviants. This method was used for 41 (80%) of all programs and inquiries addressing individual behavior change, five (42%) of those addressing organizational / institutional issues and four (100%) of those addressing social / cultural issues.

The next most common method was a quantitative survey. This involves conducting a survey of both positive deviants and normal individuals, and using statistical analysis to determine which behaviors are related to positive deviant status. Using this method, the range of possible positive deviant behaviors is predefined by the researcher or program staff when they design the survey, and so there is no opportunity for identifying new behaviors that the researcher or program staff may not have considered. This method was not used for any PD programs, but was used for 10 (31%) of all PD inquiries. For many PD inquiries, the quantitative screening and analysis was used on secondary data to identify retrospectively which behaviors were associated with a positive outcome.

One case study used a combination of qualitative and quantitative methods to determine positive deviant behaviors. This involved interviewing a small number of positive deviants. The behaviors that were identified were turned into a quantitative survey, which was then distributed to the population to validate whether the behaviors identified were actually related to positive deviant status.

Finally, six (50%) of the programs that addressed organizational / institutional level changes used staff meetings as the method for identifying PD behaviors. Once staff had identified who among the staff was a positive deviant based on their performance (e.g. having a high student retention rate), they would then discuss what their positive deviant behaviors were (e.g. specific teaching methods).

Table 7 and Table 8 show the number of PD programs and inquiries respectively that used each combination of methods to identify positive deviants and discover their behaviors.

Table 7

Methods Used to Identify Positive Deviants and Their Behaviors by Level of Intervention for PD Programs

Method used to		Level of intervention			
Identify positive deviants	Discover behaviors	Individual behavior	Organizational / institutional	Social / cultural	Total
Individual choice / convenience	Qualitative inquiry	6	2	2	10
Qualitative screening	Qual.& Quant.	1			1
Quantitative screening	Qualitative inquiry	15	2	1	18
Staff meetings	Staff meetings		6		6
Unknown	Unknown	4	1		5

Table 8

Methods Used to Identify Positive Deviants and Their Behaviors by Level of Intervention for PD Inquiries

Method used to		Level of intervention			
Identify positive deviants	Discover behaviors	Individual behavior	Organizational / institutional	Social / cultural	Total
Individual choice / convenience	Qualitative inquiry	7	1		8
Qualitative screening	Qualitative inquiry	3		1	4
Quantitative screening	Qualitative inquiry	10			10
	Quantitative survey	9	1		10

A qualitative analysis of the methodology sections of PD programs and PD inquiries found that the majority failed to describe the relationship between program staff / researchers and community members. In particular, they did not describe this

relationship during the process of identifying PD behaviors. For example, in one case study, community members found that positive deviant mothers with well-nourished children also cut their children's hair regularly. The program staff probably knew that cutting the children's hair was not likely to be related to their nutrition, but it is unclear whether they used this knowledge to guide community members away from hair cutting as a PD behavior, or whether they allowed hair cutting to be considered a PD behavior. Although according to Pascale et al. (2010) community members should identify the PD behaviors themselves, it seems likely that some filtering may occur by program staff to guide participants to select those behaviors which fit with a western theory of medicine. However, this filtering process, or its absence, was not described in the majority of program reports and studies.

Method used to spread PD behaviors to others. Five different methods were identified for spreading positive deviant behaviors to others in the community (see Table 9). The most common method, used by 19 (95%) child nutrition programs, two other programs targeting individual behaviors, and one organizational level program, is action learning sessions (usually referred to as "Hearth" sessions in child nutrition – the hearth is a fireplace/oven where women meet together to prepare food). Action learning sessions involve the positive deviants practicing their behaviors with other members of the community so that the other members can learn them. For example, in most of the child nutrition programs, Hearth sessions typically run for a period of two weeks. During the sessions, positive deviant mothers teach the other mothers how to cook nutritious meals using locally available ingredients they have discovered (for example, in Pakistan

cooking porridge with Shea butter was a PD behavior, while in Vietnam it was shrimp and sweet potato tops). They also deliver health education sessions on key topics such as breastfeeding and hand washing. During each session mothers must contribute food and cook a nutritious meal and snacks for their children, which they eat at the session in addition to their regular meals. The mothers learn the positive deviant behaviors from the PD mother by practicing them together with their children.

Six programs, including some addressing individual behavior change and social / cultural issues, used peer educators or community volunteers to spread the PD behaviors. The peer educators and / or community volunteers would learn the positive deviant behaviors and then visit other members of the target group, often in their homes or in groups, to teach them the behaviors.

Two programs used mass media campaigns (e.g. TV spots, radio advertisements, events, etc) to spread the behaviors, while one program on female genital mutilation used advocacy activities targeting community leaders and decision makers. The majority of programs for organizational / institutional change used staff meetings or on-the-job training, mentoring or demonstrations to spread the behaviors to others.

Table 9

Method Used to Spread PD Behaviors by Level of Intervention

	Level of intervention			
Method used to spread PD behaviors	Individual behavior	Organizational / institutional	Social / cultural	Total
Advocacy campaign			1	1
Action learning sessions (incl. Hearth)	21	1		22
Mass media campaign	1	1		2
Peer educators or community volunteers	4		2	6
Staff meetings or on-the-job training		8		8
Unknown		1		1

Combinations. Table 10 shows the combinations that have been used for identifying, discovering, and spreading PD behaviors in each of the intervention levels. The most common combination, used by 13 (33%) of the programs (11 for child nutrition), was to identify positive deviants using quantitative screening against specific criteria, to identify their behaviors using qualitative interviews and focus groups, and to spread their behaviors to others using action learning (Hearth) sessions. This approach matches the steps proposed by Pascale et al. (2010) exactly.

The next most common combination, which was only used in organizational settings, was to use staff meetings to identify positive deviants and determine their behaviors, and staff meetings or on-the-job training or demonstrations to spread the behaviors to others.

Table 10

Method Used to Identify, Discover, and Spread PD Behaviors by Level of Intervention

Method used to			Level of intervention			
Identify positive deviants	Discover behaviors	Spread behaviors	Individual behavior	Organizational / institutional	Social / cultural	Total
Individual choice / convenience	Qualitative inquiry	Advocacy campaign			1	1
		Action learning sessions (incl. Hearth)	5			5
		Mass media campaign		1		1
		Peer educators or community volunteers	1		1	2
		Staff meetings or on-the-job training		1		1
Qualitative screening	Qual. & Quant.	Mass media campaign	1			1
Quantitative screening	Qualitative inquiry	Action learning sessions (incl. Hearth)	12	1		13
		Peer educators or community volunteers	3		1	4
		Staff meetings or on-the-job training		1		1
Staff meetings	Staff meetings	Staff meetings or on-the-job training		6		6
Unknown	Unknown	Action learning sessions (incl. Hearth)	4			4
		Unknown		1		1

Research Question 4

Number and type of evaluations. Thirty PD programs (75%) included some type of quantitative evaluation and 15 programs (38%) included some type of qualitative evaluation. Of these, 12 (30%) included both quantitative and qualitative evaluation in a mixed methods approach. Table 11 shows the number and type of quantitative and qualitative PD program evaluations that were identified by topic, and by level of intervention. Child nutrition programs have the largest number of quantitative and qualitative evaluations, including the only randomized controlled trial. For some topics, such as diet and weight control, gender equity, and chronic disease, no PD program evaluations were identified. Table 12 shows the number of quantitative and qualitative PD program evaluations by the method used to identify, discover and spread positive deviant behaviors. The largest number of evaluations (14, 31%) have been conducted on programs that used quantitative screening to identify positive deviants, qualitative inquiry to identify their behaviors, and action learning (e.g. Hearth) sessions to spread the behaviors to others. The next largest number (9, 20%) were on programs which had the same approach, but which used individual choice / convenience sampling instead of quantitative screening to identify positive deviants. All other methodological combinations have five or fewer evaluations.

Table 11

Number and Type of PD Program Evaluations by Topic and Level of Intervention

		Quantitative evaluations						
Level of intervention	Topic	Randomized Controlled Trial	Pre and posttest, matched comparison group	Pre and posttest, unmatched comparison group	Pre and posttest, no control	Posttest only	**Qualitative evaluations**	**Total**
Individual behavior	Child nutrition	1	3	2	9	1	10	26
	Chronic diseases							
	Diet and weight control							
	HIV/AIDS and reproductive health				1			1
	Pregnancy outcomes		2	1	1			4
	Smoking		1					1
	Total	1	6	3	11	1	10	32
Organizational / institutional	Health services			1	1		1	3
	Hospital acquired infections		1		3			4
	School education				1			1
	Prisoner wellbeing						1	1
	Total		1	1	5		2	9
Social / cultural	Child trafficking and soldiers				1		2	3
	Female genital mutilation						1	1
	Gender Equity							
	Total				1		3	4
Total		1	7	4	17	1	15	45

Table 12

Number and Type of PD Program Evaluations by Method Used to Identify, Discover, and Spread Positive Deviant Behaviors

Method used to:			**Quantitative evaluations**						
Identify positive deviants	Discover behaviors	Spread behaviors	Randomized Controlled Trial	Pre and posttest, matched compariso n group	Pre and posttest, unmatched comparison group	Pre and posttest, no control	Posttest only	**Qualitative evaluations**	**Total**
Individual choice / convenience	Qualitative inquiry	Advocacy campaign						1	1
		Action learning sessions		1	1	3		4	9
		Mass media campaign							
		Peer educators or community volunteers				2		1	3
		Staff meetings		1					1
Qualitative screening	Qual. & Quant.	Mass media campaign				1			1
Quantitative screening	Qualitative inquiry	Action learning sessions		3	3	3		5	14
		Peer educators or community volunteers	1	2				2	5
		Staff meetings				1			1
Staff meetings	Staff meetings	Staff meetings				3		1	4
Unknown	Unknown	Action learning sessions				3	1	1	5
		Unknown				1			1
Total			1	7	4	17	1	15	45

Of the 30 quantitative evaluations identified, a large number use relatively weak study designs, including 17 evaluations that used a pre and posttest without any type of comparison or control group, and one that used posttest only. Out of the 15 qualitative evaluations identified, 10 were for child nutrition, with only a small number on other topics.

Only four PD programs included any type of long term evaluation to assess the sustainability of the impact after the PD program had finished being implemented. Of these, three were for child nutrition, and one was related to child sex trafficking.

Evaluation outcomes. All of the quantitative evaluations except one showed at least some positive impacts from the PD program, even if they were not as extensive as hoped, or did not cover all target groups. The only exception was one study on a child nutrition program in Rwanda which showed no statistically significant difference between the intervention group and unmatched comparison group. Examples of positive outcomes reported from quantitative evaluations are shown in Table 13. Many of the quantitative evaluations reported improvements that were not only statistically significant, but also large enough to have a substantial impact on program beneficiaries.

Table 13

Examples of Positive Outcomes Reported from Quantitative Evaluations of PD Programs

Topic	Country	Evaluation design	Results
Child nutrition	Vietnam	Pre and posttest, matched comparison group	The prevalence of severe malnutrition decreased from 23% to 6% ($p<0.001$); the prevalence of normal weight-for-age increased from 42% to 56% ($p<0.001$). Younger siblings of participant children had better weight for age scores compared to the comparison group ($p < .021$).
Hospital acquired infections	Brazil	Pre and posttest, matched comparison group	There was more than a 2-fold difference in the number of alcohol gel aliquots dispensed per month from before to after the PD intervention. The rate of hospital acquired infections per 1,000 device days decreased from baseline to the end of the PD program in the intervention unit ($p<.05$).
Pregnancy outcomes	Egypt	Pre and posttest, matched comparison group	The mean birth-weight was significantly higher at endline compared to baseline in both target and comparison groups. However, the increase in birth-weight from endline to baseline was significantly higher ($p<0.01$) in the target areas.
Child trafficking and soldiers	Uganda	Pre and posttest, no comparison group	6.4 % of girls said they regained self-respect, self-esteem, and confidence by participating in the PD program. 92.7% said they have been identified as 'role models' by community members.
Health services	United Kingdom	Pre and posttest, no comparison group	Time savings of between 1 and 2.5 hours per staff member per week were made after implementing the PD program. Time savings of up to 30 per cent of a day for social workers were also made by transferring call handling to administration, which was part of the PD program.
HIV/AIDS and reproductive health	Cote d'Ivoire	Pre and posttest, no comparison group	Perceived peer support increased from 47% to 55%. Percent that discussed sexual abstinence with either parent increased from 14% to 23%. Percent that reported consistent condom use remained the same overall, but increased relative to campaign exposure (17% low exposure, 22% moderate exposure, 26% high exposure)
School education	Argentina	Pre and posttest, no comparison group	The school where the PD program was implemented reported 45%-50% increase in retention rates within one school year.
Smoking	Australia	Pre and posttest, matched comparison group	Eleven of 14 long-sentence prisoners who participated in the program remained abstinent for at least 12 months, compared with 16 out of 41 patients similarly followed-up at other sites. The number of smokers making efforts to quit smoking on their own was significantly higher at the intervention site.

All qualitative evaluations which investigated the impact of the PD programs reported that participants and other stakeholders felt the program had a positive impact. Some qualitative evaluations did not focus on the programs' impact or effectiveness, but instead focused on identifying successes and challenges associated with the implementation of the PD program. Example of findings from child nutrition programs include that when mothers are required to contribute their own food for the communal meal cooked during Hearth education sessions this can be a barrier to participating in the program, while the immediate changes they observe in their child (including looking visibly healthier and more playful) during the program are a motivator to continue participating. Several qualitative evaluations found that the PD behaviors identified were often similar every time that the PD inquiry was implemented. However, a number also recommended continuing to implement the PD inquiry every time, as the real benefit of the PD inquiry is the process of implementing it where community members identify their own positive deviants, rather than the specific positive deviant behaviors identified.

Three of the four long term evaluations to assess the sustainability of the PD program also reported at least some positive outcomes – both in terms of impact on health, and the continuation of PD behaviors. One long term evaluation assessed the effectiveness of a child nutrition program in Indonesia four to five years after it had been run. The evaluation included a follow-up study of 103 children who had previously participated in the program, as well as a sibling study of 448 former participants and 62 younger siblings from five intervention communities and three control communities. The purpose of studying younger siblings of program participants is to assess whether their

parents continued to implement the positive deviant behaviors, such as feeding children extra snacks during the day, they had learned with their next children who were born after the program. The results of the study showed no significant differences between children who had participated in the program and comparison communities. However, there were statistically significant differences for their younger siblings ($p<.05$). In the intervention communities the rate of moderate and severe malnutrition among younger siblings was 22% and 9.8% respectively, while among comparison communities it was 43% and 9.5%. A similar study conducted in Rwanda two to three years after program implementation found no significant differences between the intervention and comparison communities for either participants or younger siblings. A third study using the same method on a child nutrition program in Vietnam also showed no statistically significant differences for participants, but did show that the weight for age Z-scores of younger siblings in the intervention community were better than for the comparison community (age-adjusted mean WAZ –1.82 versus –2.47, respectively, $p < .021$). A range of behaviors such as breastfeeding and hand washing were more common in the intervention communities than in the comparison communities.

The final long term evaluation was a qualitative evaluation of a child trafficking program in Indonesia, using interviews, focus groups, and participatory sketching in which participants in the program drew pictures to represent the changes they had experienced. The qualitative evaluation was conducted on a village that had implemented the PD program five years previously. The village was specifically selected because it had shown the most significant improvement of the three pilot areas. The results of the

evaluation showed that some substantial changes had occurred since the PD program was implemented. This included that no new girls had been trafficked out of the village in the five year period, there had been twenty averted cases of trafficking, the use of travel papers was now strictly enforced, a community watch group had been set up, and a girls' club had been established. Participatory sketches by community members emphasized the ability for girls to work outside the village safely, and greater community interaction. According to the interviews the community had started using PD for other development issues, in addition to trafficking.

No case studies discussed the environmental sustainability of the PD behaviors. In some cases it is possible that when the PD behaviors are spread to large numbers of other people they may not be sustainable in the long term. For example, in Vietnam one PD behavior was collecting shrimp from the rice paddies to feed to children. This is sustainable if only a small number of mothers are collecting these shrimp. However, it is possible that when large numbers of mothers learn this behavior they will all collect shrimp, and so the numbers of shrimp may be reduced to a point where they are no longer available.

Quality assessment. Apart from looking at the overall study design, assessing the rigor and quality of the evaluations was extremely difficult, as only seven quantitative evaluations out of 30 (23%) had enough information available to complete the quality assessment tool, and only four qualitative evaluations out of 15 (27%) had enough information.

Table 14 shows that the majority of evaluation reports had incomplete

descriptions of the setting and population, and many had incomplete descriptions of the PD approach and evaluation methodology used, which meant that the quality assessment tools could not be completed. Only nine evaluation reports had enough information available in all sections to complete the quality assessment tools.

Table 14

Number of Evaluations with Complete, Incomplete, and Missing Report Sections

Report section	Complete	Incomplete	Missing
Setting and population	8	23	2
Description of PD approach	12	18	3
Description of evaluation methodology	12	13	8
Description of evaluation results	14	19	

Even when the evaluations did have enough information available to complete the quality assessment tools, it was difficult to complete the tools since they were designed to assess scientific research studies. The program evaluations used a range of methods that would be considered acceptable and appropriate for a program evaluation in the field, but which do not meet the criteria for scientific research. For example, a program evaluation conducted solely by program staff typically does not require the same ethical considerations as a research study. However, this is a criterion in the quality assessment tool for qualitative studies.

Therefore, a decision was made to use a slightly flexible interpretation of the quality assessment tools so that each evaluation could be assessed based on what it claimed to be, rather than assessing it strictly against research criteria (see the minutes in Appendix G for details of this discussion). The peer debriefer and I first decided to

identify what the evaluation was intended to be used for. For example, evaluations published in peer reviewed journals were intended to be used as research, while evaluations published in program reports were intended to be used by field staff to improve the program implementation on the ground, but were not intended as research. Once we had agreed what the purpose of the evaluation was we then allowed some flexibility in the quality assessment criteria based on that purpose. For example, one of the quantitative quality assessment criteria was "Was (were) the outcome assessor(s) aware of the intervention or exposure status of participants?" For evaluations done for the purposes of research the answer to this question is very important for assessing the overall quality of the research. However, evaluations done for the purposes of field work almost always involve program staffs who are naturally aware of the intervention status of program beneficiaries. Therefore, we decided not to mark down the quality of field evaluations too much if they did not meet this criterion, as long as they acknowledged it as a weakness and included reflection on how the involvement of the program staff may have influenced the results.

Each evaluation was given an overall rating based on a combination of the individual ratings for subsections in the quality assessment tools (see Appendices E and F for details of the subsections). Evaluations received an overall rating of *strong* if none of the subsections contained a weak of unknown rating. Evaluations received overall rating of *moderate* if the subsections contained one weak or unknown rating, while evaluations with two or more weak or unknown ratings were given an overall rating of *weak*. Using this approach, three of the seven quantitative evaluations with enough information

available to complete the tools were rated strong, while four were rated moderate. One of the four qualitative studies with enough information available to complete the tool was rated as strong, one was rated as moderate, and two were rated as weak (see Table 15).

Table 15

Quantitative and Qualitative Assessment Ratings for Evaluations with Enough Information to Complete the Quality Assessment Tools

Topic	Country	Evaluation Quality Assessment Rating	
		Quantitative	Qualitative
Child nutrition	Bangladesh	Moderate	Moderate
Child nutrition	Bangladesh	Moderate	Not applicable
Child nutrition	Rwanda	Moderate	Not applicable
Child nutrition	Vietnam	Strong	Weak
Female Genital Mutilation	Egypt	Not applicable	Strong
Pregnancy outcomes	Senegal	Strong	Not applicable
Pregnancy outcomes	Egypt	Strong	Not applicable
Child trafficking	Indonesia	Not applicable	Weak
Hospital acquired infections	Brazil	Moderate	Not applicable

A number of methodological flaws were identified in multiple studies. None of the quantitative evaluations clearly stated to which populations the results of the study could be generalized. It was unclear whether they were generalizing to other people in the same community who met those specific criteria, or to other communities or settings. This issue has a significant impact on how the quality of the statistical analysis is assessed.

For quantitative evaluations the unit of allocation and unit of analysis were often unclear. Most evaluations (even those related to individual behavior change) assigned

entire villages to the intervention and control groups, rather than assigning individuals. However, the same evaluations used the individual as the unit of allocation and analysis. Since all members of a village do not act independently, the unit of allocation and analysis should technically have been the village. This would dramatically reduce the sample size and power of the analysis in these studies.

The methods used in the qualitative evaluations were relatively poor, as only one out of four received a rating of strong. Examples of methodological flaws included inappropriate sampling – such as only selecting interviewees from areas where the program was known to be successful – as well as failing to provide a description of the context, role of the researcher, or detailed interview results. In particular, one evaluation which claimed to be qualitative actually used quantitative analysis of very small sample sizes, which is a significant methodological flaw.

Overall, the majority of program outcome evaluations are relatively weak. Most used a weak study design and had incomplete reports which made it difficult to assess their quality. Of those that did have complete reports the quality ranged from weak to strong on an established quality assessment tool. Based on these results, there is substantial evidence to support the effectiveness of the PD approach in child nutrition, but very little high quality evidence to support its effectiveness in other areas.

Evidence of Quality

Quality was assured using a peer debriefing and auditing process. The peer debriefer conducted an audit of the first five program case studies, followed by three (10%) of all remaining program case studies, and three (10%) of all inquiry case studies,

which were randomly selected using a random number generator. A total of 11 records were reviewed by the peer debriefer. The peer debriefer provided a total 25 comments on nine of the records reviewed. Two records had no comments. I discussed each comment with the peer debriefer. In 13 of the cases we decided not to make any changes to the record as the comment was simply to clarify or confirm something in the text. In the other 12 cases corrections were made to the record. In most of these cases the corrections were minor (e.g. slight change to the start date or program title) as a result of different interpretations of the documents – particularly for documents where the language was unclear or details were missing. In some cases the audit comments resulted in a change to the process of data entry. For example, in cases where multiple subprograms were included in one program we decided to use only the most comprehensive subprogram documents to complete the case study, which was noted in the comments for the case study. The detailed results of the audit and corrective actions are shown in the audit log in Appendix K.

Throughout the entire research process the peer debriefer and I had regular phone calls to discuss emerging patterns, trends, and ideas. This included discussing the categorization of PD approaches, the pattern of diffusion of the PD approach, and philosophical / conceptual issues raised by the case studies. This process was essential for ensuring the quality of the study, as it allowed me to discuss my ideas with an independent person who could then provide alternative viewpoints and suggestions, which I then incorporated into my analysis. For example, to answer Research Question 3 I initially categorized the PD programs and inquiries by the methodology used to identify

the positive deviants and their behaviors. When faced with the same problem of classification the peer debriefer decided to classify them by topic and level of intervention. Both classifications systems proved useful for understanding the data, and so ultimately we decided to combine both into the final classification system presented in the results of this study. This process was particularly fruitful because my background is in international development in low and middle income countries, while the peer debriefer's background is in NGO management in high income countries. Between us we were able to bring two very different perspectives to the analysis. Minutes of all peer debriefing meetings can be found in Appendix G.

The quantitative quality assessment tool and qualitative quality assessment tool were completed for all program evaluations by the researcher. The peer debriefer independently completed the quality assessment tools for all program evaluations which had enough information to fully complete the tool. The peer debriefer and I then compared our overall quality ratings of each study and resolved any discrepancy in the ratings through discussion. Of the seven quantitative evaluations with enough information available to complete the tool, four received the same rating from the peer reviewer and I, while three received different ratings. Of the four qualitative evaluations with enough information available to complete the tool, three received the same rating, while one received a different rating. All of the discrepancies except for one were related to how strictly the criteria in the quality assessment tools should be applied, particularly for field evaluations that were not intended to be research. This issue is discussed in detail in the previous section on quality assessment. For example, in one case I applied

the criteria for Q6, Q7, and Q8 in the qualitative quality assessment tool very strictly since they were not explicitly address in the evaluation report, while the peer reviewer assumed that they were implied by the study design and did not need to be explicitly stated as it was a field evaluation rather than a research study. After discussion it was agreed to give an overall rating of strong, given that the evaluation was a very high quality field evaluation even though it did not strictly meet all the criteria for scientific research. The only case where the discrepancy was not related to a difference in the strictness of the criteria was one on hospital infections where the peer debriefer identified a flaw in the study design which I had overlooked. A log of the quality assessment tool ratings and discussion can be found in Appendix L. Overall the majority of quality assessment ratings were aligned between the peer debriefer and I. Rather than indicating a lack of quality in this study's methodology, these discrepancies show the difficulty of applying scientific research quality assessment tools to field evaluations, and the need for more research grade evaluations of PD programs.

In conclusion, the results show that most PD programs and evaluations were conducted for child nutrition in middle and low income countries. The approach has only recently diffused to other topics and high income countries, and there were few evaluations available for these programs. Four factors were identified which differentiate between PD approaches: the level of intervention; the method used to identify positive deviants; the method used to discover their behaviors; and the method used to spread the behaviors to others. The following section discusses the implications of these findings.

Chapter 5: Discussion, Conclusions, and Recommendations

Overview

This study used multiple case study analysis based on publicly available documents to identify, describe, and analyze 40 case studies of past and present community health programs that used the PD approach and 32 cases studies of PD inquiries. Analysis of these case studies provides an overall picture of how, where, and when the PD approach has been used and its diffusion through community health practice. The analysis has also been used to develop a categorization of PD approaches currently in use and to assess the qualitative and quantitative evidence for their effectiveness. The ultimate aim of the study was to provide evidence for or against the wider use of the PD approach in mainstream community health practice.

The results of the study showed that the majority of PD programs and evaluations have been conducted in the area of child nutrition in middle and low income countries. It is only relatively recently that the PD approach has diffused to other topics and to high income countries. In some cases the rate of diffusion can be linked to the presence of specific elements from the theory of diffusion of innovations, such as the Sternins who have acted as innovators by pushing the PD approach into new areas. Four factors were identified that can be used to classify positive deviance approaches: (a) the level of intervention; (b) the method used to identify positive deviants; (c) the method used to discover their behaviors; and (d) the method used to spread those behaviors to others. Many different combinations of these factors have been used, although some are more common than others. Finally, with the exception of child nutrition, relatively few

evaluations of the PD approach were identified, and even fewer could be classified as high quality research. The rest of this section discusses the implications of the findings and recommendations for future actions.

Current Use of PD Approach in Community Health Practice

The idea that individuals may hold the solutions to long standing problems has a natural appeal to it which motivates and inspires people. Successful applications of the PD approach make for good stories, in which the heroes are local people and the solutions were "right under their nose." This natural appeal of PD was described by Lewis (2009) when she first heard about the approach:

> The concept of 'positive deviance' (PD) captured my imagination and the hearts of many other alumni of the Oxford University/HEC Paris Consulting… Jerry and Monique's passion, humour and humility engaged us, as did their powerful stories of what PD had achieved. (p. 282)

The powerful stories of what PD has achieved can be seen in the current and past applications of PD to community health practice, in particular, the first applications of the PD approach to child nutrition in low and middle income countries, which were highly successful. Even today, the majority of PD programs and inquiries identified as part of this study were for child nutrition programs implemented in low and middle income countries by international development organizations such as USAID and Save the Children. This is in line with previous literature describing the history of the PD approach (Pascale et al., 2010; Positive Deviance Initiative, 2010e.; Sternin, 2002). Given that most PD programs and inquiries were for child malnutrition, it is surprising that no PD

programs or inquiries were found for child overnutrition or obesity. The potential application of the PD approach to this area is also not discussed in any of the previous literature.

Apart from child nutrition, other individual behavior change issues to which the PD approach has already been applied are smoking, pregnancy outcomes, HIV/AIDS and reproductive health, diet and weight control, and chronic diseases. While most of these topics have been mentioned in previous PD literature (Pascale et al., 2010; Positive Deviance Initiative, 2010e), they had far fewer PD programs and inquiries than child nutrition, and so it is reasonable to say that the PD approach has not become firmly established in these areas. It is interesting that some of the major health topics in developed countries, such as diet and weight control, chronic diseases, and smoking, had very few PD programs and inquiries, even though they would be obvious targets, because (like child nutrition) they are related to individual behaviors and have easily measurable outcomes. The fact that the PD approach has not been used widely for many issues related to high income countries may be related to its origins with international development practitioners such as Wishik and Van Der Vynckt (1976) and Jerry and Monique Sternin (Pascale et al., 2010). International development practitioners mainly work in low and middle income countries, and so it will take time for frameworks used in this field to diffuse into developed countries.

Another group of topics to which PD has been applied are those in organizations or institutional settings. This group included programs run in schools, hospitals, and prisons, such as improving school retention rates, reducing hospital acquired infections,

and improving prisoner wellbeing. While all of these topics are mentioned in previous PD literature (Pascale et al., 2010; Positive Deviance Initiative, 2010e) there are questions about whether the PD approach is truly a unique approach in these situations or whether it is really another name for existing organizational change frameworks. This will be discussed further in later sections.

The third group of topics to which PD has already been applied is those involving more complex sociocultural issues or social determinants of health. These included child trafficking and child soldiers, female genital mutilation, and gender equity. Relatively few PD programs and inquiries had been conducted on these topics, although some were been quite extensive. As with organizational change, it is possible that the PD approach for social/cultural change may actually be another name for existing frameworks, even though they appear in previous PD literature (Pascale et al., 2010; Positive Deviance Initiative, 2010e). This issue will be discussed further in later sections.

Local Involvement and Community Participation

It is interesting to see that the PD approach has mainly been implemented in low and middle income countries, and only recently was implemented in a meaningful way in high income countries. This diffusion process runs counter to many other approaches which start in developed countries and are applied to developing countries. However, despite the fact that it started in low and middle income countries, the majority of PD programs are still implemented by international organizations, such as USAID, rather than local organizations or government.

Given that the majority of PD programs are implemented by international

organizations, involving the local community in the development, implementation and monitoring of the program is particularly important. According to most descriptions of PD found in the literature (Bradley et al., 2009; Devane, 2009; Marsh et al, 2004; Marsh, Sternin et al., 2002; Pascale et al., 2010; Positive Deviance Initiative, 2009; Save the Children, n.d.; Schooley & Morales, 2007; Walker et al., 2007) the PD approach is a form of participatory action research that should fully involve the community and be consistent with the principles of endogenous development and participatory evaluation described by Minkler and Wallerstein (2008). However, the results of this study show that the actual level of community participation in PD programs and inquiries is far lower than this, even when a very broad definition of community participation is used. Almost no programs or inquiries involved the community in the first step of the PD approach: defining the problem. Involving the community in this step is critical for achieving citizen control, which is the highest rung on Arnstein's (1969) ladder of community participation. Without participation in the first step, PD programs can only reach lower rungs on the ladder, such as delegated power, partnership, placation, consultation, and informing. A probable reason for the lack of community participation in many programs is the time and resource pressures faced by staff. Involving the community is a time intensive process that can often lead to delays in a project or changes to the program design and goals. This unpredictability does not fit well with many donors who require projects to be implemented within a fixed timeframe and to deliver predefined outputs.

Community participation in PD programs was still higher than in PD inquiries. The majority of PD programs included community participation in at least one step

(usually implementation), while almost no PD inquiries included community participation in any step. Therefore, at best, the PD inquiries only reached the level of "tokenism" on Arnstein's (1969) ladder. In addition to time and resource pressures, another possible reason for the low level of community participation in PD inquiries is that the majority of them were conducted by researchers rather than practitioners. Researchers may have less access to community members as they do not work in the community every day.

In addition to the lack of community participation, the methodologies of almost all PD programs and PD inquiries did not describe the relationship between program staff / researchers and community members throughout the process, and particularly when identifying PD behaviors. Although according to previously published best practice guidelines PD (Pascale et al., 2010), community members are supposed to identify the PD behaviors themselves, it seems likely that some filtering may occur by program staff or researchers to guide participants to selecting those behaviors which fit with a western theory of medicine.

While previous literature describes the PD approach as fully participatory, the many case studies of successful PD programs and inquiries without any community participation show that it is technically possible to identify positive deviants and spread their behaviors in a nonparticipatory way. Therefore, it could make sense to separate the concept of the PD approach from the concept of community participation. While they are separate concepts, using both together is likely to be more effective in achieving the types of intangible community benefits described in previous literature, such as community

mobilization (Marsh et al, 2004; Save the Children, n.d.; Singhal & Greiner, 2007), empowerment (Hendrickson et al., 2002; Schooley & Morales, 2007), and increased respect for community members (Sternin, 2002). Some would argue that community participation and endogenous development is intrinsically beneficial (Arnstein, 1969; Minkler & Wallerstein, 2008), particularly in low and middle income countries where outside experts can easily ignore the opinions of local people. Therefore, although the results of this study show that participation is not technically necessary to implement the PD approach, there is still reason to believe that the meaningful involvement of community members in the implementation of the PD approach will result in greater positive social change.

On a more promising note, 80% of PD programs were part of a larger integrated program, rather than being a stand-alone program. While this does make it difficult to distinguish the effects of the PD approach from the other activities, it also increases the chances of having a long term, sustainable, impact. The fact that PD is usually part of an integrated program also addresses the criticism raised by Schulte (1993) that "the positive deviance approach may imply that we are continuing to simply do nothing about the major underlying socio-economic constraints" (p. 3). Most PD programs are one part of a broader integrated program that addresses the underlying social, economic and resource issues, rather than stand-alone programs which assume that the full solution can be found without any additional resources at all.

PD Steps

The majority of PD programs and PD inquiries identified follow the steps defined

by Pascale et al. (2010) in some way, including defining the problem, determining whether positive deviants exist, discovering their behaviors, and designing, implementing and monitoring the program. Overall, the steps defined by Pascale et al. appear to be a useful basis for defining what the PD approach should include, and are followed by many programs. However, as discussed later, not all of them implemented the steps exactly as Pascale et al. intended, and some applications may better be described using other frameworks. Very few PD programs or inquiries eliminated "true but useless" behaviors; that is, behaviors which the positive deviants practice, but which cannot be spread to other members of the community for practical reasons. This is not part of the Pascale et al. (2010) steps, but is recommended by Save the Children (n.d.).

The types of PD behaviors identified varied between the different programs and inquiries. In some cases the behaviors of positive deviants were new to both community members and program staff. These behaviors were truly novel, and came as a surprise to everyone involved. In other cases the behaviors were new for community members, but were well known as good practices by program staff – for example, attending antenatal visits, breastfeeding, and good nutrition. These types of behaviors are not recognized as positive deviance by some scholars, who believe that PD behaviors should be things not already known to scientists (The United Nations University, 1990). In a few cases the PD inquiry identified behaviors that were well known by community members, but were new for program staff, such as the methods used by moto-taxi drivers to hide condoms.

There were also some programs and inquiries in which the PD behaviors identified were already well known by both community members and program staff

before the program began, such as working hard or attending school. Given that most previous literature defines the PD approach as a process to discover the uncommon but successful practices of positive deviants (Bradley et al., 2009; Devane, 2009; Marsh et al, 2004; Marsh, Sternin et al., 2002; Pascale et al., 2010; Positive Deviance Initiative, 2009; Save the Children, n.d.; Schooley & Morales, 2007; Walker et al., 2007), it is difficult to see how behaviors which are already known to both community members and program staff match the definition of PD.

Diffusion of PD Approach Through Community Health Practice

Almost one and a half decades passed between the first suggestion to use the PD approach in child nutrition, and the first large scale application of the approach to child nutrition in Vietnam. According to Fitzpatrick (2008) it is not uncommon for there to be a long delay, even up to 30 years, between the publication of research results and its implementation in practice. The first suggestion of the positive deviance approach was published in a single peer reviewed journal article (Wishik & Van Der Vynckt, 1976). Therefore, it is not surprising that it took such a long time for practitioners to pick up on, and implement, the idea. The Sternins, who first implemented the PD approach on a large scale, described PD at that time as an "obscure research construct" (p.23, Pascale et al., 2010) which was the domain of researchers in peer reviewed journals, rather than practitioners on the ground.

Since the first large scale application of the PD approach by the Sternins in the 1990s the number of PD programs per year has steadily increased. It seems that a series of key publications in 2002 instigated by the Sternins (Ahrari et al., 2002; Berggren &

Wray, 2002; Bolles et al., 2002; Dearden, Quan, Do, Marsh, Pachón et al., 2002; Dearden, Quan, Do, Marsh, Schroeder et al., 2002; Hendrickson et al., 2002; Lapping, Marsh et al., 2002; Lapping, Schroeder et al., 2002; Sripaipan et al., 2002; Trinh Mackintosh et al., 2002) immediately preceded the spread of the PD to a range of new topics and areas.

The theory of diffusion of innovations is a useful way to think about the spread of PD through community health practice. Within the theory of diffusion of innovations, innovators are the individuals who develop a new idea or product, and then begin the process of spreading it to others – particularly early adopters (Rogers, 1995). The role of the Sternins as innovators cannot be overstated. The results from this study show that, not only did they take the idea proposed by Wishik et al. (1976) and apply it to the first large scale study, but they were also instrumental in spreading it to other early adopters (Pascale et al., 2010).

However, even though the PD approach was introduced to a range of new topics (often by the Sternins), the rate of spread seems to vary between topics. For child nutrition, the PD approach has spread from the innovators (the Sternins) to other early adopters, and now appears to be spreading through the early majority to become relatively well established. PD in hospital acquired infections also appears to be on the cusp of spreading to the early majority. By comparison, the application of PD to other topics in most cases has only spread from the innovators to a small number of early adopters (e.g. pregnancy outcomes, school education, HIV/AIDS and reproductive health). In some cases the approach has not spread at all past the first implementation

(e.g. female genital mutilation).

Based on the results of this study it seems that some of these differences can also be explained by the theory of diffusion of innovations. According to the theory, innovations are more likely to spread if they have certain characteristics, including relative advantage compared to other solutions, compatibility with existing practices and cultures, a low level of complexity, easy ability to trial, and an easy method for observing results (Rogers, 1995). The PD approach in child nutrition and hospital acquired infections meets all these criteria, which may explain why the approach has diffused so rapidly in these areas. The PD approach in other topics meets fewer of the criteria, which may also explain why the approach has not diffused, or is diffusing at a slower rate. This alignment between the theory of diffusion of innovations criteria and the diffusion of the PD approach gives further support to the theory of diffusion of innovations. It gives another example of how the theory can apply to the adoption of new approaches by researchers and practitioners, not just the adoption of new technologies by the general public.

Possibility of Grouping PD Approaches in Typology

Four factors were identified which can be used to distinguish between the PD approaches used in the case studies: the level of intervention, the method used to identify positive deviants, the method used to discover their behaviors, and the method used to spread their behaviors to others. These factors were identified through a qualitative analysis of the case studies, and they have not previously been used to group or classify PD approaches. A fundamental question is whether all combinations of these factors

should be considered the PD approach, as distinct from other approaches, or whether some of them should not be called the PD approach.

The first factor is the level of intervention. This study has identified three different levels of intervention where PD programs and inquiries have been implemented: individual behavior change, organizational / institutional change, and social / cultural change. Categorizing case studies using these three levels is useful because most other frameworks and theories are related to a specific level (NCI, 2005). By grouping them this way it is easier to compare the PD approach to other frameworks and theories at the same level.

At the level of individual behavior change, the PD approach appears to be quite distinct when compared to other approaches based on theories, such as stages of change (Prochaska & DiClemente, 2005), the health belief model (Rosenstock, Strecher & Becker, 1988), and the theory of planned behavior (Sheppard, Hartwick, & Warshaw, 1988). No other individual behavior change frameworks, approaches, or theories use the same method of identifying positive deviants, discovering their uncommon behaviors, and spreading those behaviors to others. The most similar approach is the concept of modeling good behaviors according to social cognitive theory (Bandura, 1986). However, the PD approach goes beyond simply modeling good behaviors, to identify new behaviors and strategies that people may not have considered before. Therefore, at the individual behavior change level I believe that the PD approach should be considered a unique and separate approach.

However, at the organizational / institutional level the PD approach is very similar

to a combination of organizational change approaches that already exist. PD at this level appears to combine elements of appreciative inquiry, best practices, quality improvement, and learning organizations approaches. Appreciative inquiry involves all employees looking within the organization for successful practices which can then be expanded and enhanced (Cooperrider, Whitney, and Stavros, 2008). Best practices involves looking for an innovative "technique, method, process, activity or incentive which has proven to be most effective" (The Best Practice Network, 2009, para.5) and applying it in an organization. Quality improvement involves continuously monitoring the results of a process in order to find ways to improve it (Riley & Moran, 2010), while the learning organizations framework is based on full employee participation in which "people at all levels, individuals and collectively, are continually increasing their capacity to produce results they really care about" (Richard Karash, n.d., para.2).

Most of these organizational change frameworks include the idea of finding the unique and successful practices of others and spreading them throughout the organization in a participatory way. Given this, the PD approach could be described as a repackaging of existing frameworks under a new name. This conclusion is in line with Lewis (2009) who used the PD approach for health services improvement in the United Kingdom, and concluded that "PD is a highly practical way of delivering change and cuts through the psychobabble of some change management approaches, while being entirely consistent with current thinking about the human aspects of change, employee engagement, and how to overcome resistance" (Lewis, 2009, p.287). As Lewis states, PD is "entirely consistent" with existing thinking on organizational change. Its main benefit then is the

way in which it repackages these existing frameworks under the new name of PD. As stated earlier, PD is a naturally inspiring concept, and is supported by powerful stories from the field of international development. Even if the approach is not fundamentally different from existing frameworks, the PD name and inspiring stories from the field may help convince staff to participate during organizational change initiatives. That said, the PD approach is still relatively rare in the organizational literature. A search of organizational and management literature databases revealed only 25 results for PD, while there were 70 for appreciative inquiry, 803 for learning organizations, 10,423 for quality improvement and 9,571 for best practice. Therefore, even though the PD approach may have some benefits in organizational change, its relative advantage according to the theory of diffusion of innovations may not be great enough for it to replace the existing organizational change frameworks which use essentially the same approach.

At the social / cultural level it also appears that the PD approach may not actually be a new approach, but simply another name for role models, which have been used in social change programs for many years and are a core element of social cognitive theory (Bandura, 1986). While the current uses of the PD approach at the individual behavior change level go beyond the concept of modeling by identifying unique behaviors and spreading them, the small number of PD programs and inquiries implemented for social / cultural change focus mainly on positive deviants as role models for good behaviors that are already known. That is, the PD behaviors identified by these programs were already known to be good behaviors by both community members and program staff before the

program started. As discussed previously, I do not believe these behaviors should be considered PD because they are not new behaviors.

For example, in the case study of a PD program to help reintegrate returned child soldiers, girls were selected as "positive deviants" if they practiced predefined positive deviant behaviors such as attending school, running a small business, and respecting adults. These behaviors were already considered good behaviors by parents, program staff, community leaders, and the girls themselves. They were not new behaviors that had been discovered as part of the PD inquiry. Therefore, I believe that it is better to say the girls in the program were role models for good behaviors, rather than saying they were positive deviants practicing new or unusual behaviors.

In the evaluation, participants also referred to the girls as role models: "The PD girls are role models. They are respectful and resourceful. They wear clean clothes and have food on the table. They work hard and have taken control of their lives" (Singhal & Dura, 2008, p. 49). In addition to role models, the girls in the child soldiers' program could also be considered examples of resiliency (Lapping, Marsh et al., 2002; Zeller, 1991).

The PD program on female genital mutilation is similar. The positive deviants in this program were leaders or family members who opposed female genital mutilation. While this is a good behavior to model, it is not a new or unique behavior that has been identified through a positive deviance inquiry, and due to cultural reasons some community members considered it to be a bad behavior rather than a good behavior. Several other programs targeting female genital mutilation used exactly the same

approach, but referred to these people simply as “role models” rather than positive deviants (Oloo, Wanjiru, & Newell-Jones, 2011; World Bank & UNFPA, 2004).

In addition to the concept of role models, the PD programs targeting social / cultural change also draw on elements of community development frameworks. For example, the trafficking case study in Indonesia included obvious community organizing elements described by Minkler and Wallerstein (2005), such as mobilizing local support for the initiative. It also included elements of assets based community development as described by Mathie and Cunningham (2003), such as identifying existing local resources which could be used to bring about positive change. Given this, and the relatively small number of case studies in the social / cultural change area, I believe that the PD approach in this area does not offer anything new. It is easier and clearer to refer to the positive deviants in these programs simply as role models.

The fact that the PD approach at the organizational / institutional and social / cultural levels overlaps with existing frameworks is not surprising, since it was first introduced to both of these areas by the Sternins. By his own admission, Jerry Sternin was not a specialist in theoretical frameworks:

> Jerry Sternin, despite having been Counseling Dean of Harvard University, never considered himself an academic or theorist. ‘I’m sorry, but I’m not a methodologist. I don’t know what’s out there. I only know what I know,’ he said to CCC alumnus Roberto Saco (Lewis, 2009, p.286).

Therefore, it is entirely possible that when the Sternins moved from their original

programs in child nutrition to new areas in organizational and sociocultural change, they may not have been familiar with all the existing theories and approaches in those areas. Instead, they applied the PD approach which they had found very successful in their early work on child nutrition.

After the intervention level (individual behavior, organizational / institutional, or social / cultural), the next factors which can be used to classify PD approaches are the method used to identify the positive deviants and the method used to discover their behaviors. Looking at these methods for programs targeting individual behavior change, several combinations of methods seem to be effective (see *Figure 11*). The most common combination, which could also be considered best practice, is to use quantitative screening against specific criteria to identify positive deviants and then use qualitative interviews, focus groups, and/or observations to identify their behaviors. This method could be considered best practice as all positive deviants will be systematically identified, and the inquiry to determine their behaviors is open-ended and flexible so that behaviors which the program staff may not have considered before will be identified. A variation on this approach is to use systematic qualitative screening against specific qualitative criteria to identify positive deviants, and then additional qualitative interviews and focus groups to identify their behaviors. This method could be useful when addressing outcomes which cannot be measured quantitatively, although it has only been applied in a small number of cases. A limitation of this approach is that it is extremely time consuming, as it requires a large number of interviews or focus groups to be analyzed.

A more cost-effective approach is to use individual choice or convenience

sampling to identify positive deviants, and then qualitative interviews or focus groups to determine their behaviors. While this approach was very common in the PD program and inquiry case studies, it was normally only used as a substitute for quantitative or qualitative screening when there was not enough time or resources to systematically identify positive deviants. A key limitation of this approach is that some behaviors may not be identified because the positive deviants have not been systematically identified. The results may also be biased by the person selecting the positive deviants. For example, if the village chief is asked to identify women with good child care practices they may choose their own relatives or friends, so the results of this type of PD inquiry may not be as convincing for community members as systematically collecting the data. Despite these limitations, the paper by Lapping, Schroeder et al. (2002) which compared this approach to a case-control study shows that it can still be effective when there is limited time and resources.

One study on HIV (Babalola et al., 2006) used qualitative screening to identify positive deviants, and then used qualitative interviews to identify their behaviors. These behaviors were then included in a quantitative survey to see if they were actually related to positive deviant status in the general population. This approach is more likely to identify real positive deviant behaviors since it validates the results of the qualitative inquiry with a survey. The downside is the additional time and resources required, and the specialist expertise required for developing a valid and reliable survey instrument based on the positive deviant behaviors identified.

Many of the PD inquiries used only quantitative methods to identify positive

deviants and their behaviors. This typically involved administering a predefined survey or using a secondary data set. The quantitative data were then analyzed to identify any statistical correlations between behaviors and positive deviant status. I do not believe this should be considered the PD approach, as all questions on the survey were predefined by the researcher or program staff. This means that the PD inquiry will not identify any new or uncommon behaviors that researchers or program staff may not have considered before.

The final factor which can be used to categorize PD approaches is the method used to spread the behaviors to others. If organizational / institutional and social / cultural programs are ruled out, only three methods of spreading behaviors to other people remain: action learning sessions (Hearths), peer educators or community volunteers, and mass media campaigns. The current best practice for spreading PD behaviors to others is action learning sessions, as there were several high quality evaluations conducted on programs which have used this method to successfully spread behaviors in both the short and long term. Action learning sessions are also recommended as best practice by previous literature on PD (Pascale et al., 2010; Positive Deviance Initiative, n.d.) as they are highly participatory. An alternative to action learning sessions is to use peer educators or community volunteers to spread the behaviors to others. Although there were only three evaluations available for this approach, they included the only randomized controlled trial available, as well as two quasi-experimental evaluations with matched comparison groups, all of which reported at least some positive results. Therefore, even though this is not considered a best practice by previous PD literature it could be

considered a best practice based on the results of this study, as it has a higher level of evidence than other methods. Finally, one individual behavior change program successfully used mass media to spread the behaviors to others. Mass media is not a participatory approach, and with only one existing evaluation, it cannot yet be considered a best practice. *Figure 11* summarizes the different combinations of methods found in the case studies, and identifies which could be considered a unique PD approach, which are already covered by existing frameworks, which should not be considered PD, and which could be considered best practice given the available evidence. These are new classifications based on the results of this study, and have not previously been proposed in the PD literature. The combinations of methods found in the case studies do not represent all possible combinations that could theoretically be included in the PD approach. For example, using quantitative screening followed by a qualitative inquiry and then spreading the behaviors via mass media is a combination that is theoretically possible, but was not included in any of the case studies. As the body of PD literature grows more combinations may be added to the list.

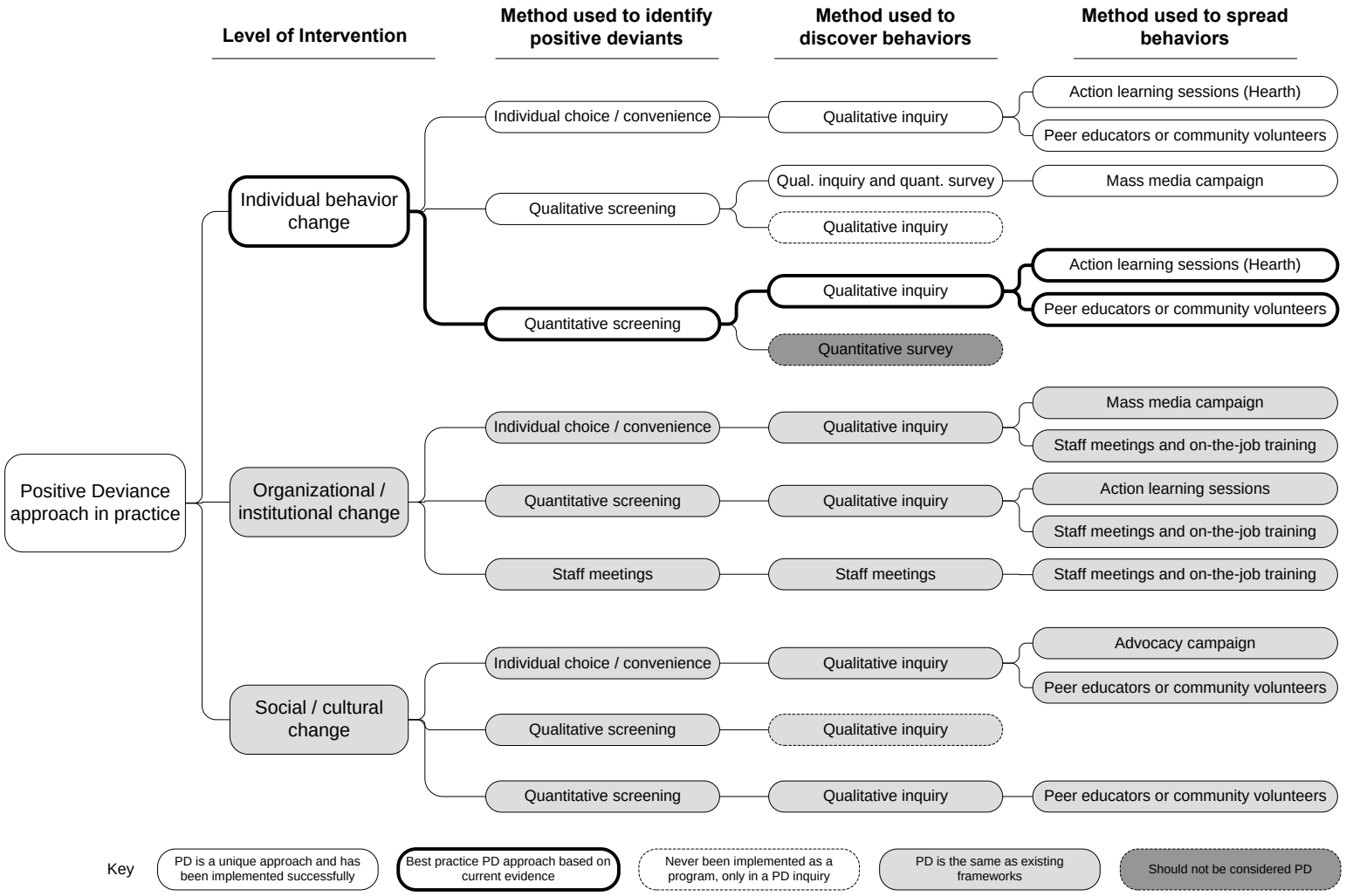

Figure 11. PD approaches used in practice

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Outcomes and Rigor of PD Program StudiesWhile previous literature on the PD approach has described many examples of individual PD programs (Ahrari et al, 2002; Aruna, Vazir, & Vidyasagar, 2001; Awofeso et al., 2008; Babalola et al., 2006; Bradley et al., 2009; Dearden, Quan, Do, Marsh, Pachón et al., 2002; Friedman et al., 2008; Kim et al., 2008; The United Nations University, 1990; Vossenaar et al., 2009; Walker et al., 2007; Wishik & Van Der Vynckt, 1976), no study has attempted to review all the available evidence for the effectiveness of the PD approach in general.

The results of this study show that the only topic with a substantial body of literature on the effectiveness of the PD approach was child nutrition, with a total of 26 evaluations. However, even in this area the study designs used to evaluate the programs were relatively weak and in most cases substantial sections of the report were incomplete or missing. There was only one randomized controlled trial, three quasi-experimental designs with a matched comparison group, and one design with an unmatched comparison group. All of the child nutrition evaluations except one showed at least some positive impacts from the PD program, even if they were not as extensive as hoped, or did not cover all target groups. These results provide more concrete support for previous recommendations by individual such as Berggren and Wray (2002) to use the PD approach in child nutrition. Therefore, although there is room to expand the number of evaluations, particularly those using more rigorous study designs, the current level of evidence does suggest that the PD approach in child nutrition can have positive impacts that may be sustained in the long term.

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No other topic had enough published evaluations to draw any meaningful conclusions from this study, although all the quantitative and qualitative evaluations reported some positive results. Both hospital acquired infections and pregnancy outcomes had a small number of quantitative studies of a reasonable level of rigor that showed positive results, although more studies are needed to confirm their results. These results do not confirm or contradict previous literature, as there have not been any overall reviews of the PD approach in topics outside child nutrition. However, organizations such as the Positive Deviance Initiative (2010e) have been promoting the use of PD in a wide range of areas. The results from this study suggest that there may not be strong evidence for its use in all areas, although there is definitely room for more pilot programs and evaluation studies to determine its effectiveness. It is surprising that all published evaluations except one showed at least some positive results, and it is possible that publication bias means that PD programs with negative results or no effects have deliberately not been published.

Assessing the rigor of the evaluations using the quality assessment tools proved challenging. Very few evaluation reports had enough information available to complete the tools. Even when the information was available, it was difficult to complete the tools as they were designed to assess scientific research studies rather than program evaluations. Therefore, some flexibility was required in the interpretation of the tools. This highlights both the need for separate tools to assess program evaluations, and the need for more actual research (rather than program evaluations) into the PD approach. If new tools were developed in the future it would be ideal to have separate tools for

research studies and program evaluations. The tools for research studies would be the same as the quality assessment tools used in this study, while the tools for program evaluations would include evaluation criteria that are matched to the standards published by organizations such as the American Evaluation Association (AEA, n.d.). Both scientific research and field evaluations have the potential to contribute to our understanding of PD. Scientific studies provide a higher level of rigor for assessing the efficacy of the PD approach in ideal conditions, while field evaluations are able to provide a broader picture of its overall effectiveness when implemented in the field.

Limitations

There are four main limitations to this study as a result of the methodology used. First, and most importantly, the case studies were limited to those that could be described using publicly available documentation online. Given that the majority of PD program case studies were based on internal program reports that had been loaded onto websites, it is entirely possible that large numbers of other PD programs have been implemented, but their programs reports are not publicly available. It is also possible that some older programs or inquiries might not have been available online.

Secondly, the potential for publication bias means that some programs which showed no, or negative, results may have been deliberately not published. This would affect the conclusions about the effectiveness of the PD approach.

Thirdly, this study only included PD programs and inquiries related to health or social determinants of health. Based on the search results during sampling it is clear that PD is also being used in a range of nonhealth areas, such as climate change and economic

development. Future studies could investigate the use of PD in these areas.

Finally, the aggregation of subprograms into larger programs may have affected the interpretation of some results. Aggregating subprograms into their larger programs resulted in an overall lower number of programs, even though the number of individual implementations was very high. However, the aggregation was justified given that many of the large programs had combined evaluations covering all subprograms, and counting each individual subprogram separately would have made the data more difficult to analyze and interpret.

Implications for Positive Social Change

This study provides compelling evidence for the wide use of PD in child nutrition. Making the PD approach a standard approach for child nutrition could have significant positive social change implications. Early childhood nutrition is related to long term outcomes in the areas of health, education and social development, and so reducing rates of malnutrition will have a corresponding positive impact in these areas. Universities, trainers, writers, and community health professionals should incorporate PD for child malnutrition into their training materials, textbooks, and programs.

The results of this study also show the potential for PD to contribute to positive social change for other individual behavior change issues, including smoking, weight loss, HIV prevention, and childhood obesity, although researchers and practitioners should conduct more trials and high quality outcome evaluations to determine exactly which topics the PD approach is useful for. This study can provide a basis for further research in these areas, which will ultimately contribute to positive social change by

identifying effective programs based on the PD approach which can be implemented to improve community health.

Finally, this study has drawn attention to the significant discrepancy between the ideal of PD as a highly participatory approach (Pascale et al., 2010) and the reality of PD programs and inquiries on the ground that rarely involve the community in a meaningful way. While the results show that community participation is not technically necessary for implementing the PD approach, it is still important for creating positive social change at the community level that is aligned with the real needs and opinions of local people (Minkler & Wallerstein, 2005). Therefore, this study will hopefully motivate practitioners to involve community members in a meaningfully way during all steps of the PD process.

Recommendations for Action

The results of this study show there is compelling evidence for including the PD approach as a standard approach to child malnutrition, and implementing it widely in low and middle income countries. However, in other areas of individual behavior change, such as pregnancy outcomes, smoking, HIV/AIDS, weight loss, and reproductive health, the PD approach is still in its infancy. PD practitioners should consider piloting PD programs in these areas, and using rigorous outcome evaluations to assess their results, before implementing them widely.

PD should not be considered a separate approach for issues related to organizational / institutional change and social / cultural change, as there are existing frameworks in these areas which cover essentially the same approach and are already more widely used. The term positive deviance should also be reserved for behaviors that

are new to community members and/or program staff. Behaviors that were already considered positive by community members and program staff should not be called positive deviant behaviors.

When implementing PD programs practitioners should consider using the best practices identified by this study. This includes using quantitative screening to identify positive deviants, qualitative inquiry to identify positive deviant behaviors, and action learning or peer educators / community volunteers to spread the behavior to others. Although it is not technically necessary, practitioners should also consider the potential benefits of implementing the PD approach in a fully participatory way.

There is a strong argument for testing the application of PD to child overnutrition in middle and high income countries given how successful it has been at addressing child malnutrition in middle and low income countries. Child overnutrition, and its relationship to overweight, obesity and chronic disease, is a growing concern, with relatively few effective programs available to combat it. If positive deviance was as successful with overnutrition as it is with malnutrition, this could make a very substantial contribution to positive social change.

The PD approach could easily be applied to this problem by having a group of community members measure and weigh children to identify those who are a normal weight for their age despite having many of the social risk factors associated with childhood obesity, such as poverty, lower parental education, and a parent who is overweight or obese. This would prove to community members, particularly the parents of children who are overweight or obese, that it is possible to have a normal weight child

even in difficult circumstances, and that positive deviant parents have clearly found unique solutions for the problems they face. Community members could then interview and observe the positive deviant parents to see what unique behaviors they use, including particular types of affordable foods, recipes, and types of exercise. The positive deviant parents could teach these behaviors to other parents using action learning sessions similar to the Hearth sessions for malnutrition. Participatory monitoring could be done by community members by weighing and measuring the children throughout the program to see if it is successful.

One challenge associated with applying the PD approach to childhood obesity compared to child malnutrition is that a parent's motivation to help a child lose weight may not be as strong as their motivation to help a malnourished child gain weight. Malnourished children are at immediate risk of acute health problems, and they gain weight very quickly once the Hearth sessions start, which motivates the parents to keep going. The health risks of childhood obesity are longer term and so parents may not be as motivated. In addition, losing weight takes longer than gaining weight, which does not provide immediate reinforcement to parents. Practitioners involved in child nutrition in middle and high income countries should trial PD as a high priority.

Recommendations for Further Study

Since the results of this study show that the majority PD program evaluations were weak methodologically, researchers should conduct more trials and high quality outcome evaluations to determine exactly which individual behavior change topics the PD approach is effective for (e.g. smoking, weight loss, HIV/AIDS, etc). Implementers of

future PD programs should be strongly encouraged to evaluate their programs using a rigorous study design. This can often be difficult for program staff that are busy implementing the program and may not have the research skills or time required to conduct a rigorous evaluation. Therefore, it will be important for researchers at academic institutions to partner with implementing agencies for this purpose, in addition to conducting their own high quality research into PD. These evaluations should be disseminated through peer reviewed publications rather than languishing in incomplete and sometimes incoherent internal reports, as was the case for many PD programs in this study.

Almost all existing evaluations compare the PD approach with no intervention. It would be interesting to see whether a comparison between action learning sessions based on PD behaviors and action learning sessions based on regular good practice showed any differences. It is possible that the effectiveness of the PD approach in child nutrition is not actually related to the PD approach itself, but to factors such as community participation, action learning, and regular feedback to parents.

Researchers should consider restricting their use of the term PD to cases where it clearly meets the definitions provided by Pascale et al. (2010). Using the term PD too freely when other terms already exist may cause confusion and dilute the meaning of PD. Specifically, researchers should not use the term PD when they are simply looking for correlations between variables and a positive outcome using a predefined survey or secondary data. In these types of studies there is no possibility of identifying new behaviors that have not previously been considered. PD should be reserved for studies

where new behaviors are being identified using primary data collection. Researchers should also carefully consider the use of term PD in relation to organizational / institutional change and social / cultural change when frameworks already exist to describe the same approach.

As part of this study a large number of stand-alone PD inquiries were found in which PD behaviors were identified but were not incorporated into a program or disseminated to the community. By definition, PD behaviors are those which could easily be incorporated into programs because they are already being practiced by some community members and do not require additional resources to implement. Therefore, researchers who discover new PD behaviors should be strongly encouraged to disseminate their findings directly to practitioners in the field so they can be incorporated into existing programs.

When applying the PD approach to a new area, or trying to promote its wider use in an existing area, it might also be useful to consider the theory of diffusion of innovations. Research findings which meet the requirements for quick diffusion are more likely to be taken up by practitioners than those which do not. Researchers should also consider where they publish the results of their programs and studies. While the Positive Deviance Initiative website (2010e) is probably contributing to the spread of the approach into other areas, a greater number of complete reports published other locations targeting practitioners would also help this.

Reflection on the Researcher's Experience

This study used a qualitative analysis of multiple case studies, and so my own preconceived biases, ideas, and values, as well as those of the peer debriefer, may have influenced our interpretation and analysis of the data. There are several factors and experiences which may have affected my interpretation of the data. During this study I was working in Cambodia in an international development setting. My experiences working in this setting made me more aware of issues related to international development, such as the involvement of local governments, local NGOs, sustainability, and the severe lack of trained staff and resources faced by many programs. By comparison, the peer debriefer's experience is in management consultancy for NGOs in developed countries. Therefore, he approached the topic from a very different perspective which complemented my approach. He asked more questions related to the application of PD in developed countries, and particularly to organizations. He was very instrumental in highlighting the overlap between the PD approach and other organizational frameworks since he has extensive experience in that area. I believe our two contrasting approaches worked well together to give a balanced analysis of the data from both a developing and developed country perspective.

This research has also influenced my own perspectives on the PD approach. I first heard about PD when reading the book "Influencer" (Patterson, Grenny, Maxfield, McMillan & Switzler, 2007) as part of the required reading for one of my university courses. At the time I was impressed by the simplicity of the idea and its potential to discover solutions from within the community itself. As I discussed it with other people I

found they were also inspired by it, and particularly by the success stories of positive deviants discovered by early programs. My original PhD proposal was an application of the PD approach to hygiene and sanitation in rural Tanzania, in partnership with a local community organization. Unfortunately, or fortunately, I decided not to pursue this proposal because of the time required to obtain ethical approval from the Tanzanian government to conduct research.

While conducting the literature review for my first proposal I discovered that the PD approach was not a tried and tested method as I had expected from the success stories, but a relatively new approach which had only been implemented in a small number of areas. This made it very difficult for me to design the Tanzanian proposal, and it is what motivated me to conduct this current study.

Through completing this study I have found that, while the success stories of positive deviants are very inspiring, they can also give the impression that the PD approach is more participatory than it really is, and has a lot more evidence than it actually does. In reality the PD approach has only been applied to a few areas and, with the exception of child nutrition, it does not yet have a full body of evidence to support it. Although it is described as a fully participatory approach, the reality is that most implementations fall far short of this ideal. For me, this is a personal lesson in being critical of new approaches and "buzzwords" which may be very appealing and inspiring, but might not be supported by a lot of evidence.

Conclusion

Despite the powerful stories of what PD has achieved and its natural appeal, this study has shown that the PD approach has only been extensively applied to child nutrition. While it has been applied in other areas in the last decade - often as the result of innovations by the Sternins – PD is still at the very early stages of the diffusion process. Based on the results of this study I believe there is sufficient evidence to conclude that the PD approach in individual behavior change is something unique, while in organizational / institutional change and social / cultural change, PD is already covered by existing frameworks and theories. When applying PD to individual behavior change there are clearly some methods of identifying positive deviants, discovering the behaviors, and spreading those behaviors to others which are aligned with past PD literature and are also supported by more high quality outcome evaluations. These could be considered current best practices in the field.

There is significant evidence for the effectiveness of PD in child malnutrition. However, in other areas of individual behavior change, such as pregnancy outcomes, smoking, HIV/AIDS, weight loss, and reproductive health, the PD approach is still in its infancy. More research is needed to determine whether the PD approach is effective in these areas before it can be considered a standard approach.

In conclusion, PD is an innovative approach which is naturally appealing and inspiring. It is clearly effective in the area of child malnutrition, and has the potential to contribute to many other areas of individual behavior change in low, middle and high income countries.

References

Ahrari, M., Houser, R. F., Yassin, S., Mogheez, M., Hussaini, Y., Crump, P.,…Levinson, F. J. (2006). A positive deviance-based antenatal nutrition project improves birth-weight in Upper Egypt. *Journal of Health, Population & Nutrition, 24*(4), 498-507. Retrieved from http://www.jhpn.net

Ahrari, M., Kuttab, A., Khamis, S., Farahat, A. A., Darmstadt, G. L., Marsh, D. L., & Levinson, F. J. (2002). Factors associated with successful pregnancy outcomes in Upper Egypt: A positive deviance inquiry. *Food and Nutrition Bulletin, 23*(1), 83-88. Retrieved from http://www.foodandnutritionbulletin.org

American Evaluation Association. (n.d.). The program evaluation standards. Retrieved from http://www.eval.org/evaluationdocuments/progeval.html

Arnold, D. G., & Hartmann, L. P. (2005). Beyond sweatshops: positive deviancy and global labour practices. *Business Ethics: A European Review, 14*(3), 206-222. Retrieved from http://www.wiley.com/bw/journal.asp?ref=0962-8770

Arnstein, S. R. (1969). A ladder of citizen participation. *Journal of the American Institute of Planners, 35*(4), 216-224. Retrieved from http://lithgow-schmidt.dk/sherry-arnstein/ladder-of-citizen-participation.pdf

Aruna, M., Vazir, S., & Vidyasagar, P. (2001). Child rearing and positive deviance in the development of preschoolers: A microanalysis. *Indian Pediatrics, 38*, 332-339. Retrieved from http://www.indianpediatrics.net

Australian Community Development and Civil Society Strengthening Scheme [ACCESS]. (2009). ACCESS Phase II: A Toolkit for Understanding and Using

Strength Based Approaches in Development. Retrieved from http://www.access-indo.or.id

Awofeso, N., Irwin, T., & Forrest, G. (2008). Using positive deviance techniques to improve smoking cessation outcomes in New South Wales prison settings. *Health Promotion Journal of Australia, 19*(1), 72-73. Retrieved from http://www.healthpromotion.org.au/journal

Babalola, S., Awasum, D., & Quenum-Renaud, B. (2002). The correlates of safe sex practices among Rwandan youth: a positive deviance approach. *African Journal of AIDS Research, 1*, 11–21. Retrieved from http://www.ajol.info/index.php/ajar

Babalola, S., Ouedraogo, D., & Vondrasek, C. (2006). Motivation for late sexual debut in Côte d'Ivoire and Burkina Faso: A positive deviance inquiry. *Journal of HIV/AIDS Prevention in Children & Youth, 7*(2), 65-87. doi:10.1300/J499v07n02_05

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Englewood Cliffs, NJ: Prentice Hall.

Barker, G. (2000). Gender equitable boys in a gender inequitable world: reflections from qualitative research and programme development in Rio de Janeiro. *Sexual and Relationship Therapy, 15*(3), 206-282. Retrieved from http://www.tandf.co.uk/journals/SRT

Berggren, W. L., & Wray, J. D. (2002). Positive deviant behavior and nutrition education. *Food and Nutrition Bulletin, 23*(4) (Suppl.), 7-8. Retrieved from http://www.foodandnutritionbulletin.org

Best Practice Network, The. (2009). *The best practice network – definition of a best practice.* Retrieved from http://www.best-practice.com/

Biggs, S. (2008). Learning from the positive to reduce rural poverty and increase social justice: Institutional innovations in agricultural and natural resources research and development. *Experimental Agriculture, 44*, 37–60. doi:10.1017/S001447970700595

Bolles, K., Speraw, C., Berggren, G., & Lafontant, J. G. (2002). Ti Foyer (hearth) community-based nutrition activities informed by the positive deviance approach in Leogane, Haiti: A programmatic description. *Food and Nutrition Bulletin, 23*(4) (Suppl.), 9-15. Retrieved from http://www.foodandnutritionbulletin.org

Bradley, E. H., Curry, L. A., Ramanadhan, S., Rowe, L., Nembhard, I. M., & Krumholz, H. M. (2009). Research in action: using positive deviance to improve quality of health care. *Implementation Science, 4*(25). Online publication. doi:10.1186/1748-5908-4-25

Brokenleg, M. (2010). The resilience revolution: Our original collaboration. *Reclaiming Children and Youth, 18*(4), 8-11.

Bullen, P. (2004). Some practice questions in evaluating services. *Developing Practice: The Child, Youth and Family Work Journal, 11*, 38. Retrieved from http://reclaimingjournal.com

Buscell, P. (2008). Pathways to prevention: Mapping the positive deviance/MRSA prevention networks at Pennsylvania and Montana healthcare facilities shows promise. *Prevention strategist, Autumn.* Retrieved from the Positive Deviance

Initiative website: http://www.positivedeviance.org/pdf/evaluation/Pathways%20to%20Prevention.pdf

Catalani, C., & Minkler, M. (2010). Photovoice: A review of the literature in health and public health. *Health Education & Behavior, 37*, 424-451. doi: 10.1177/1090198109342084

Creswell, J. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches (3rd ed).* Thousand Oaks, CA: Sage Publications.

Creswell, J. W. (2007). *Qualitative inquiry & research design: Choosing among five approaches (2nd ed).* Thousand Oaks, CA: Sage Publications.

Comparing and Supporting Endogenous Development [COMPAS]. (2007). *What is endogenous development?* Retrieved from: http://www.compasnet.org/ed_1.html

Cooperrider, D., Whitney, D., & Stavros, J. M. (2008). *Appreciative inquiry handbook: For Leaders of change (2nd ed).* Brunswick, Ohio: Crown Custom Publishing, Inc.

Daniels, K., & Lewin, S. (2008). Translating research into maternal health care policy: a qualitative case study of the use of evidence in policies for the treatment of eclampsia and pre-eclampsia in South Africa. *Health Research Policy And Systems, 6*, 12. Retrieved from: http://www.health-policy-systems.com

Davies, S. R. (2011). A rare complication of a unilateral vertebral artery occlusion, which resulted in a basilar emboli after a C5-C6 bifacet dislocation in a professional rugby player: case study. *The Spine Journal, 11*(3), p.e1-4. doi:10.1016/j.spinee.2011.01.030

Dearden, K. A., Quan, L. N, Do, M., Marsh, D. R., Pachón, H., Schroeder, D. G., & Lang, T. T. (2002). Work outside the home is the primary barrier to exclusive breastfeeding in rural Viet Nam: insights from mothers who exclusively breastfed and worked. *Food and Nutrition Bulletin, 23*(4) (Suppl.), 99-106. Retrieved from http://www.foodandnutritionbulletin.org

Dearden, K. A., Quan, L. N., Do, M., Marsh, D. R., Schroeder, D. G., Pachón, H., & Lang, T. T. (2002). What influences health behavior? Learning from caregivers of young children in Viet Nam. *Food and Nutrition Bulletin, 23*(4) (Suppl.), 117-127. Retrieved from http://www.foodandnutritionbulletin.org

Devane, T. (2009). *The positive deviance approach - A briefing.* Retrieved from Positive Deviance Initiative website: http://www.positivedeviance.org/pdf/research/The_Positive_Deviance_Briefing_T_Devane.pdf

Edward, S. (1985). Positive deviance: an oxymoron. *Deviant Behavior, 6*(2), 169-181.

Effective Public Health Practice Project [EPHPP] (2009). *Quality assessment tool for quantitative studies dictionary.* Retrieved from http://www.ephpp.ca/PDF/QADictionary_dec2009.pdf

Effective Public Health Practice Project [EPHPP] (2010). *Quality assessment tool for quantitative studies.* Retrieved from http://www.ephpp.ca/PDF/Quality%20Assessment%20Tool_2010_2.pdf

Fitzpatrick, J. J. (2008). Lag time in research to practice: are we reducing or increasing the gap? *Applied Nursing Research, 21*(1), 1. Retrieved from

http://www.appliednursingresearch.org

Fowles, E. R., Hendricks, J. A., & Walker, L. O. (2005). Identifying healthy eating strategies in low-income pregnant women: Applying a positive deviance model. *Health Care for Women International, 26*, 807–820. Retrieved from http://www.tandf.co.uk/journals/UHCW

Friedman, S. R., Mateu-Gelabert, P., Sandoval, M., Hagan, H., & Des Jarlais, D. C. (2008). Positive deviance control-case life history: a method to develop grounded hypotheses about successful long-term avoidance of infection. *BMC Public Health, 8*(94). Online publication. doi:10.1186/1471-2458-8-94

Finlayson, K. W., & Dixon, A. (2008). Qualitative meta-synthesis: a guide for the novice. *Nurse researcher, 15*(2), 59-71. Retrieved from http://nurseresearcher.rcnpublishing.co.uk

Gertner, J. (2008, December 14). Positive deviance. *The New York Times.* Retrieved from http://www.nytimes.com/2008/12/14/magazine/14ideas-section3-t-005.html

Goode, E. (1991). Positive deviance: a viable concept? *Deviant Behavior, 12*(3), 289-309. Retrieved from http://www.tandf.co.uk/journals/tf/01639625.html

Guldan, G. S., Zhang, M. Y., Zhang, Y. P., Hong, J. R., Zhang, H. X., Fu, S. Y., & Fu, N. S. (1993). Weaning practices and growth in rural Sichuan infants: a positive deviance study. *Journal of Tropical Pediatrics, 39*(3), 168-175. doi:10.1093/tropej/39.3.168

Heckert, D. M. (1985). *Toward a theory of positive deviance* (Doctoral dissertation). University of New Hampshire, US.

Heckert, D. M. (1998). Positive deviance: A classificatory model. *Free Inquiry in Creative Sociology; 26*(1), 23-30. Retrieved from Sage Journals.

Hendrickson, J. L., Dearden, K., Pachón, H., Hoi An, N., Schroeder, D. G., & Marsh, D. R. (2002). Empowerment in Rural Viet Nam: Exploring changes in mothers and health volunteers in the context of an integrated nutrition project. *Food and Nutrition Bulletin, 23*(4) (Suppl.), 83-91. Retrieved from http://www.foodandnutritionbulletin.org

Higgins J. P. T., & Green, S. (Eds.). (2009). *Cochrane handbook for systematic reviews of interventions version 5.0.2.* Retrieved from The Cochrane Collaboration website: http://www.cochrane-handbook.org.

Horowitz, B. (2008). *Using positive deviance methods to help legal service providers to ethically and successfully handle public extortion situations.* Retrieved from the Positive Deviance Initiative website: http://www.positivedeviance.org/projects/Anti-extortion%20concurrent%20BBL%20Results%20FINAL.pdf

Israel, A. B., Schultz, A. J., Parker, E. A., Becker, A. B., Allen, A. J., & Guzman, R. (2008). Critical issues in developing and following CBPR principles. In Minkler, M. & Wallerstein, N. (Eds.), *Community-based participatory research for health: From process to outcomes (2nd Ed.)* (pp. 47-66). San Francisco, CA: John Whiley & Sons, Publishers.

Issel, L. M. (2004). *Health program planning and evaluation: A practical, systematic approach for community health.* Sudbury, MA: Jones and Bartlett Publishers, Inc.

Karash, R. (n.d.). *Learning organizations: Where the learning begins.* Retrieved from http://www.see.ed.ac.uk/~gerard/MENG/MEAB/lo_index.html

Khan, A. A., Khan, N. U., Bile, K. M., & Awan, H. (2010). Creating synergies for health systems strengthening through partnerships in Pakistan -- a case study of the national eye health programme. *Eastern Mediterranean Health Journal, 16*, S61-8. Retrieved from http://www.emro.who.int/emhj.htm

Kim, Y. M, Heerey, M., & Kols, A. (2008). Factors that enable nurse–patient communication in a family planning context: A positive deviance study. *International Journal of Nursing Studies, 45*, 1411–1421. doi:10.1016/j.ijnurstu.2008.01.002

Lapping, K., Marsh, D. R., Rosenbaum, J., Swedberg, E., Sternin, J., Sternin, A., & Schroeder, D. G. (2002). The positive deviance approach: Challenges and opportunities for the future. *Food and Nutrition Bulletin, 23*(4) (Suppl.), 128-135. Retrieved from http://www.foodandnutritionbulletin.org

Lapping, K., Schroeder, D., Marsh, D., Albalak, R., & Zahir Jabarkhil, M. (2002). Comparison of a positive deviant inquiry with a case-control study to identify factors associated with nutritional status among Afghan refugee children in Pakistan. *Food and Nutrition Bulletin, 23*(4) (Suppl.), 26-33. Retrieved from http://www.foodandnutritionbulletin.org

Levinson, F. J., Barney, J., Bassett, L., & Schultink, W. (2007). Utilization of positive deviance analysis in evaluating community-based nutrition programs: An application to the Dular program in Bihar, India. *Food and Nutrition Bulletin,*

28(3), 259-265. Retrieved from http://www.foodandnutritionbulletin.org

Long, A. F., & Godfrey, M. (2004) An evaluation tool to assess the quality of qualitative research studies. *International Journal of Social Research Methodology Theory and Practice, 7* (2): 181-196. Retrieved from http://www.tandf.co.uk/journals/tsrm

Mackenbach, J. P., Van Den Bos, J., Joung, Van De Mheen, H., & Stronks, K. (1994). The determinants of excellent health: Different from the determinants of iII health? *International Journal of Epidemiology, 23*(6), 1273-1281. Retrieved from http://ije.oxfordjournals.org

Marsh, D. R, Schroeder, D. G., Dearden, K. A., Sternin, J., & Sternin, M. (2004). The power of positive deviance. *BMJ, 329*, 1177-1179. doi:10.1136/bmj.329.7475.1177

Marsh, D. R., & Schroeder, D. G. (2002). The positive deviance approach to improve health outcomes: experience and evidence from the field—preface. *Food and Nutrition Bulletin, 23*(4) (Suppl.), 3-5. Retrieved from http://www.foodandnutritionbulletin.org

Marsh, D. R., Khanh, V. N., Ha, P. B., Kiem, T. T., Vu, N. A., & Jones, E. (2007). *Save the Children working paper no. 2: Acceptability, feasibility, quality, effect, and sustainability of a "PD-Plus" approach for improving newborn, child, and maternal care in Quang Tri province, Vietnam.* Retrieved from the Positive Deviance Initiative website: http://www.positivedeviance.org/pdf/research/CS%2018%20OR%20Report-1.pdf

Marsh, D. R., Pachón, H., Schroeder, D. G., Ha, T. T., Dearden, K., Lang, T. T.,…Claussenius, D. (2002). Design of a prospective, randomized evaluation of an integrated nutrition program in rural Viet Nam. *Food and Nutrition Bulletin, 23*(4) (Suppl.), 34-44. Retrieved from http://www.foodandnutritionbulletin.org

Marsh, D. R., Sternin, M., Khadduri, R., Ihsan, T., Nazir, T., Bari, A., & Lapping, K. (2002). Identification of model newborn care practices through a positive deviance inquiry to guide behavior-change interventions in Haripur, Pakistan. *Food and Nutrition Bulletin, 23*(4) (Suppl.), 107-116. Retrieved from http://www.foodandnutritionbulletin.org

Mathie, A., & Cunningham, G. (2003). From clients to citizens: Asset-based community development as a strategy for community-driven development. *Development in Practice, 13*(5), 474-486. Retrieved from http://www.developmentinpractice.org

McKenzie, J. F., Neiger, B. L., & Thackery, R. (2009) *Planning, implementing & evaluating health promotion programs: A primer (5th Ed.).* San Francisco, CA: Benjamin Cummings.

McKenzie, J. F., Pinger, R. R., & Kotecki, J. E. (2008). *An introduction to community health (6th Ed.).* Sudbury, MA: Jones and Bartlett Publishers, Inc.

Milton, C., & Ochieng, O. (2007). Development through positive deviance and its implications for economic policy making and public administration in Africa: The case of Kenyan agricultural development, 1930–2005. *World Development, 35*(3), 454–479. 2007doi:10.1016/j.worlddev.2006.04.003

Minkler, M., & Wallerstein, N. (2005). Improving health through community

organization and community building: A health education perspective. In Minkler, ed. *Community organizing and community building for health (2nd ed).* New Brunswick, NJ: Rutgers University Press.

Minkler, M., & Wallerstein, N. (Eds.) (2008). *Community-based participatory research for health: From process to outcomes (2nd Ed.).* San Francisco, CA: John Whiley & Sons, Publishers.

Miles, M. B., & Huberman, M. (1994). *Qualitative data analysis: An expanded sourcebook (2nd Ed.)*. Sage Publications: London & Thousand Oaks, California

Mustaphi, P., & Dobe, M. (2005). Positive deviance - the West Bengal experience. *Indian Journal of Public Health, 49*(4), 207-13. Retrieved from http://www.ijph.in

National Institutes of Health [NIH]. (2008). *Community-based participatory research scientific interest group (CBPR-SIG).* Retrieved from http://grants.nih.gov/grants/training/esaig/cbpr_sig.htm

National Health Service [NHS] Critical Appraisal Skills Programme [CASP] (2006). 10 questions to help you make sense of qualitative research. Retrieved from http://www.sph.nhs.uk/sph-files/casp-appraisal-tools/Qualitative%20Appraisal%20Tool.pdf

Ndiaye, M., Siekmans, K., Haddad, S., & Receveur, O. (2009). Impact of a positive deviance approach to improve the effectiveness of an iron-supplementation program to control nutritional anemia among rural Senegalese pregnant women. *Food and Nutrition Bulletin, 30*(2), 28-36. Retrieved from http://www.foodandnutritionbulletin.org

Oloo, H., Wanjiru, M., & Newell-Jones, M. (2011). Female genital mutilation practices in Kenya. Retrieved from http://www.feedtheminds.org/downloads/FGM%20Report_March2011.pdf

Onxy, J., & Bullen, P. (2000). Measuring social capital in five communities. *Journal of Applied Behavioural Science,* 36(1), 23-42. Retrieved from http://jab.sagepub.com/

Onxy, J., & Bullen, P. (2001). Chapter 4, The different faces of social capital in NSW. In Dekker, P. & Uslaner, E.M. *Social capital and participation in everyday life*. London, UK: Routledge.

Pascale, R., Sternin, J., & Sternin, M. (2010). *The power of positive deviance*. Boston, MA: Harvard Business Press.

Paterson, B. L., Thorne, S. E., Canam, C., & Jillings, C. (2001). *Meta-study of qualitative health research: A practical guide to meta-analysis and meta-synthesis.* Thousand Oaks, CA: Sage.

Patterson, K., Grenny, J., Maxfield, D., McMillan R., & Switzler, A. (2007). *Influencer: The power to change anything.* New York: McGraw Hill.

Patton, M. Q. (2002). *Qualitative research & evaluation methods (3rd Ed).* Thousand Oaks, CA: Sage.

Petticrew, M., & Roberts, H. (2006). *Systematic reviews in the social sciences: A practical guide.* Malden, MA: Blackwell Publishing.

Population Council (2008). *Female genital mutilation abandonment program: Evaluation summary report.* Retrieved from

http://www.unicef.org/evaldatabase/files/EGY_FGM_AP_report.pdf

Positive Deviance Initiative (2009). *Basic guide to the positive deviance approach.* Retrieved from http://www.positivedeviance.org/about_pd/Final%20revised%2006-03-09Basic_PD_Steps_2.pdf

Positive Deviance Initiative (2010a). *Voices from the field: Public health.* Retrieved from http://www.positivedeviance.org/from_the_field/voices-public-health.html

Positive Deviance Initiative (2010b). *Voices from the field: Vulnerable populations.* Retrieved from http://www.positivedeviance.org/from_the_field/voices-vulnerable-populations.html

Positive Deviance Initiative (2010c). *Voices from the field: Other.* Retrieved from http://www.positivedeviance.org/from_the_field/voices-other.html

Positive Deviance Initiative (2010d). *Stories: Public health.* Retrieved from http://www.positivedeviance.org/from_the_field/stories-public-health.html

Positive Deviance Initiative (2010e). *Positive Deviance Initiative website.* Retrieved from http://www.positivedeviance.org/

Positive Deviance Initiative (n.d). *Positive deviance approach for behavior & social change.* Retrieved from http://www.positivedeviance.org/pdf/generic_for_website.pdf

Prochaska, J. O., & DiClemente, C. C. (2005). The transtheoretical approach. In Norcross, J. C. & Goldfried, M. R. (Eds.)., *Handbook of psychotherapy integration (2nd ed). (pp. 47–171).* New York: Oxford University Press.

Riley, W. J., & Moran, J. W. (2010). Defining quality improvement in public health. *Journal of Public Health Management & Practice, 16*(1), p 5–7. doi: 10.1097/PHH.0b013e3181bedb49

Rogers, E. M. (1995). *Diffusion of innovations (4th ed)*. New York: The Free Press.

Rosenstock, I. M., Strecher V. J., & Becker, M. H. (1988). Social learning theory and the health belief model. *Health Education Quarterly, 15*(2), 175-83. Retrieved from http://hej.sagepub.com

Save the Children (n.d.). *Positive deviance: A strength based approach to behavior change and social mobilization.* Retrieved from the Positive Deviance Initiative website http://www.positivedeviance.org/projects/Brief_PD_Pakistan.pdf

Schooley, J., & Morales, L. (2007). Learning from the community to improve maternal–child health and nutrition: The positive deviance/hearth approach. *Journal of Midwifery & Women's Health, 52*(4), 376-383. doi:10.1016/j.jmwh.2007.03.001

Schuftan, C. (1993). Positive deviance in child nutrition: a critique. *Ecol. of Food and Nutrition, 30*(2). Retrieved from http://humaninfo.org/aviva/ch25.htm

Sethi, V., Kashyap, S., Aggarwal, S., Pandey, R.M., & Kondal, D. (2007). Positive deviance determinants in young infants in rural Uttar Pradesh. *Indian Journal of Pediatrics, 74*(6), 594-595. Retrieved from http://www.ijppediatricsindia.in

Sethi, V., Kashyap, S., Seth, V., & Agarwal, S. (2003). Encouraging appropriate infant feeding practices in slums: A positive deviance approach. *Pakistan Journal of Nutrition, 2*(3), 164-166. Retrieved from http://www.pjbs.org/pjnonline

Sheppard, B. H., Hartwick, J., & Warshaw, P. R. (1988). The theory of reasoned action:

A meta-analysis of past research with recommendations for modifications and future research. *Journal of Consumer Research, 15*, 325–343. Retrieved from http://ejcr.org

Singhal, A., & Dura L. (2008). *A positive deviance approach to child protection: A comparative assessment of two projects.* Retrieved from http://www.positivedeviance.org/projects/Singhal-Dura-Draft-composite-9-29-08.pdf

Singhal, A., & Greiner, K. (2007). *"*Do what you can, with what you have, where you are" A quest to eliminate MRSA at the VA Pittsburgh healthcare system. Plexus Institute, *Deeper Learning, 1*(4) Retrieved from the Positive Deviance Initiative website: http://www.positivedeviance.org/pdf/publications/DoWhatYouCan.pdf

Spencer, L., Ritchie, J., Lewis, J., & Dillon, L. (2003). *Quality in qualitative evaluation: a framework for assessing research evidence*. (Report ISBN: 07715 04465 8.) Retrieved from http://www.civilservice.gov.uk/Assets/a_quality_framework_tcm6-7314.pdf

Spreitzer, G.M., & Sonenshein, S. (2004). Toward the construct definition of positive deviance. *The American Behavioral Scientist, 47*(6), 828-847. Retrieved from http://abs.sagepub.com

Sripaipan, T., Schroeder, D. G., Marsh, D. R., Pachón, H., Dearden, K. A., Ha, T. T., & Lang, T. T. (2002). Effect of an integrated nutrition program on child morbidity due to respiratory infection and diarrhea in northern Viet Nam. *Food and Nutrition Bulletin, 23*(4) (Suppl.), 67-74. Retrieved from

http://www.foodandnutritionbulletin.org

Sternin, J. (2002). Positive deviance: A new paradigm for addressing today's problems today. *The Journal of Corporate Citizenship, 5*, 57-62. Retrieved from http://www.greenleaf-publishing.com/default.asp?ContentID=7

Timulak, L. (2009). Meta-analysis of qualitative studies: A tool for reviewing qualitative research findings in psychotherapy. *Psychotherapy Research, 19*(4-5), 591-600. doi 10.1080/10503300802477989

Tjerbo, T. (2009). The politics of local hospital reform: a case study of hospital reorganization following the 2002 Norwegian hospital reform. *BMC Health Services Research, 9*, 212. doi:10.1186/1472-6963-9-212

The United Nations University (1990). *Positive deviance in child nutrition - with emphasis on psychosocial and behavioural aspects and implications for development.* Retrieved from http://www.unu.edu/unupress/unupbooks/80697e/80697e00.htm

Trinh Mackintosh, U. A., Marsh, D. R., & Schroeder, D. G. (2002). Sustained positive deviant child care practices and their effects on child growth in Viet Nam. *Food and Nutrition Bulletin, 23*(4) (Suppl.), 16-25. Retrieved from http://www.foodandnutritionbulletin.org

Vossenaar, M., Mayorga, E., Jose Soto-Mendez, M., Medina-Monchez, S. B., Campos, R., Anderson, A. S., & Solomons, N. W. (2009). The positive deviance approach can be used to create culturally appropriate eating guides compatible with reduced cancer risk. *The Journal of Nutrition, 139*, 755–762. doi:10.3945/jn.108.100362

Walker, L. O., Sterling, B. S., Hoke, M. M., & Dearden, K. A. (2007). Applying the concept of positive deviance to public health data: A tool for reducing health disparities. *Public Health Nursing, 24*(6), 571–576. Retrieved from http://www.wiley.com/bw/journal.asp?ref=0737-1209

Walsh, D., & Downe, S. (2005). Meta-synthesis method for qualitative research: A literature review. *Journal of Advanced Nursing, 50*(2), 204–211. Retrieved from http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1365-2648

Wang, C., & Burris, M. A. (1994). Empowerment through photo novella: Portraits of participation. *Health Education & Behavior, 21*, 171-186. doi:10.1177/109019819402100204

West, B. (2004). Synergies in deviance: Revisiting the positive deviance debate. *Electronic Journal of Sociology*, p0-0. Retrieved from http://www.sociology.org

Wishik, S. M., & Van Der Vynckt, S. (1976). The use of nutritional 'positive deviants' to identify approaches for modification of dietary practices. *AJPH, 66*(1), 38-42. Retrieved from http://ajph.aphapublications.org/

World Health Organization [WHO]. (2010). *Equity, social determinants and public health programmes.* Retrieved from http://whqlibdoc.who.int/publications/2010/9789241563970_eng.pdf

World Bank. (2011). *Country and lending groups.* Retrieved from http://data.worldbank.org/about/country-classifications/country-and-lending-groups#Low_income

World Bank & United Nations Population Fund [UNFPA] (2004). *Female genital*

mutilation / cutting in Somalia. Retrieved from http://siteresources.worldbank.org/INTSOMALIA/Data%20and%20Reference/20316684/FGM_Final_Report.pdf

Zeitlin, M., Ghassemi, H., & Mansour, M. (1990). *Positive deviance in child nutrition: With emphasis on psychosocial and behavioral aspects and implications for development.* The United Nations University. Retrieved from http://unu.edu/unupress/unupbooks/80697e/80697E00.htm

Zeller, K. R. (1991) Nutritional resilience in a hostile environment: positive deviance in child nutrition. *Nutrition Reviews, 49*(9), 259-268. Retrieved from http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1753-4887

Appendix A: Document Data Collection Form

1	Document ID	
2	Title	
3	Author(s)	
4	Year of Publication	
5	Source	
6	Volume / Issue	
7	Page numbers	
8	DOI	
9	Date retrieved	
10	URL	
11	Date retrieved	
12	Source type	Peer reviewed journal Gray literature source
13	Type of document	
14	Topic	
15	Country	
16	Comments	

Appendix B: Program / Inquiry Data Collection Form

All fields are relevant for PD programs. Field numbers marked with an (I) are relevant for PD inquiries.

1	***Sources***	
1.1 (I)	Type	Program / Inquiry
1.2 (I)	ID	
1.3 (I)	Related document IDs	
1.4 (I)	Document types	
2	***Program Details***	
2.1 (I)	Country	
2.2 (I)	Province / area	
2.3 (I)	Region	
2.4 (I)	World Bank Income Level	
2.5 (I)	Topic	
2.6 (I)	Objective	
2.7	Target beneficiaries	
2.8 (I)	Setting	
2.9	Program name	
2.10	Program type	Stand-alone Integrated
2.11	Funding organization	

2.12	Implementing organization	
2.13 (I)	Linked to the Sternins	Yes / No
2.14	International organization involved	Yes / Not reported or unknown
2.15	National organization involved (NGO, university etc)	Yes / Not reported or unknown
2.16	National government involved (includes any level of govt)	Yes / Not reported or unknown
2.17 (I)	Program start year	
2.18	Program end year	
2.19	Program length (years)	
3	***Positive Deviance Steps Implemented***	
3.1 (I)	Define	Yes/No/Unknown
3.2 (I)	Determine	Yes/No/Unknown
3.3 (I)	Discover	Yes/No/Unknown
3.4	Design	Yes/No/Unknown
3.5	Implementation	Yes/No/Unknown
3.6	Monitor	Yes/No/Unknown
4	***Any Community Participation in Positive Deviance Steps***	
4.1 (I)	Define	Yes/No/Unknown
4.2 (I)	Determine	Yes/No/Unknown
4.3 (I)	Discover	Yes/No/Unknown

4.4	Design	Yes/No/Unknown
4.5	Implementation	Yes/No/Unknown
4.6	Monitor	Yes/No/Unknown
5	***Practical Implementation***	
5.1 (I)	Method used to identify PDs and their behaviors – description	
5.2 (I)	Method used to identify PDs – category	
5.3 (I)	Method used to discover PD behaviors – category	
5.4 (I)	Elimination of "True But Useless" PD behaviors	Yes / No
5.5 (I)	PD behaviors identified – description	
5.6	Method used to spread PD behaviors to other member of the community – description	
5.7	Method used to spread PD behaviors – category	
5.8	Community level facilitation done by	
5.9	Institutionalization activities	
6	**Type of Evaluation**	
6.1	Includes quantitative evaluation	Yes / No

6.2	Includes qualitative evaluation	Yes / No
6.3	Has a long term evaluation after the program was completed	Yes / No
7	***Evaluation Report Completeness***	
7.1	Description of setting / population	Complete/Incomplete/Missing
7.2	Description of PD approach	Complete/Incomplete/ Missing
7.3	Description of study methodology	Complete/Incomplete/ Missing
7.4	Description of results	Complete/Incomplete/ Missing
8	***Quantitative Evaluation***	
8.1	Testing	Pre and posttest Posttest only
8.2	Control group	Yes/No
8.3	Randomization	Randomized Matched Neither randomized nor matched N/A – no control group
8.4	Sample size	
8.5	Outcome variables	
8.6	Results	
8.7	Results category	Positive impact No impact Negative impact

8.8	Global quality rating (from quality assessment tools)	Strong Moderate Weak Unknown
9	***Qualitative Evaluation***	
9.1	Methods	
9.2	Results	
9.3	Results category	Positive impact No impact Negative impact
9.4	Global quality rating (from quality assessment tools)	Strong Moderate Weak Unknown
10	***Comments***	

Appendix C: Databases

The following databases were used to identify documents describing PD programs:

Databases accessed through the EBSCO multiple database search interface:

- CINAHL Plus with Full Text
- MEDLINE
- PsycARTICLES
- PsycINFO
- SocIndex with Full Text
- Political Science Complete
- Communications & Mass Media Complete

Databases accessed through the ProQuest multiple database search interface:

- ProQuest Nursing & Allied Health
- ProQuest Central
- ProQuest Health and Medical Complete
- ProQuest Psychology Journals
- Science Journals
- Social Science Journals
- Research Library

Databases accessed through the SAGE multiple database search interface:

- Health Sciences
- Social Science & Humanities

Multidisciplinary Databases:

- Academic Search Complete
- Web of Science
- ResearchNow
- Science Direct

Appendix D: Gray Literature Sources

The following gray literature sources were used to identify documents describing PD programs:

Gray literature databases:

- The British Library Integrated Catalogue, including conference proceedings index
- Walden University Library Catalogue
- Copac National, Academic, and Specialist Library Catalogue
- ProQuest Dissertations and Theses
- Networked Digital Library of Theses and Dissertations
- Open System for Information on Gray Literature (SIGL)

Organization websites (selected based on the findings of the proposal literature search):

- The Plexus Institute
- Positive Deviance Project Canada
- CARE
- Caritas International
- Family Health International
- OXFAM
- PLAN International
- Positive Deviance Resource Center
- Save the Children
- The Australian Government's overseas aid program (AusAID)
- UK Department for International Development (DFID)
- UNICEF
- United Nations University
- United States Agency for International Development (USAID)
- World Health Organization
- World Vision

Appendix E: Quality Assessment Tool For Quantitative Studies

The following tool is based on the EPHPP Quality Assessment Tool for Quantitative Studies (EPHPP, 2010). Some minor adjustments have been made to allow for a larger amount of missing data in gray literature studies. The tool is to be used in conjunction with the EPHPP Quality Assessment Tool for Quantitative Studies Dictionary (EPHPP, 2009).

COMPONENT RATINGS

A) SELECTION BIAS

(Q1) Are the individuals selected to participate in the study likely to be representative of the target population?

Very likely

Somewhat likely

Not likely

Can't tell

(Q2) What percentage of selected individuals agreed to participate?

80 - 100% agreement

60 – 79% agreement

less than 60% agreement

Not applicable

Can't tell

RATE THIS SECTION See dictionary	**STRONG**	**MODERATE**	**WEAK**	**UKNOWN**

B) STUDY DESIGN

(Q1) Indicate the study design

Randomized controlled trial

Controlled clinical trial

Cohort analytic (two group pre + post)

Case-control

Cohort (one group pre + post (before and after))

Interrupted time series

Other specify _____

Can't tell

(Q2) Was the study described as randomized? If NO, go to Component C.

No Yes

(Q3) If Yes, was the method of randomization described? (See dictionary)

No Yes

(Q4) If Yes, was the method appropriate? (See dictionary)

No Yes

RATE THIS SECTION See dictionary	**STRONG**	**MODERATE**	**WEAK**	**UKNOWN**

C) CONFOUNDERS

(Q1) Were there important differences between groups prior to the intervention?

Yes

No

Can't tell

The following are examples of confounders:

Race

Sex

Marital status/family

Age

SES (income or class)

Education

Health status

Pre-intervention score on outcome measure

(Q2) If yes, indicate the percentage of relevant confounders that were controlled (either in the design (e.g. stratification, matching) or analysis)?

80 – 100% (most)

60 – 79% (some)

Less than 60% (few or none)

Can't Tell

RATE THIS SECTION See dictionary	**STRONG**	**MODERATE**	**WEAK**	**UKNOWN**

D) BLINDING

(Q1) Was (were) the outcome assessor(s) aware of the intervention or exposure status of participants?

Yes

No

Can't tell

(Q2) Were the study participants aware of the research question?

Yes

No

Can't tell

RATE THIS SECTION See dictionary	STRONG	MODERATE	WEAK	UKNOWN

E) DATA COLLECTION METHODS

(Q1) Were data collection tools shown to be valid?

Yes

No

Can't tell

(Q2) Were data collection tools shown to be reliable?

Yes

No

Can't tell

RATE THIS SECTION See dictionary	STRONG	MODERATE	WEAK	UKNOWN

F) WITHDRAWALS AND DROP-OUTS

(Q1) Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?

Yes

No

Can't tell

Not Applicable (i.e. one time surveys or interviews)

(Q2) Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).

80 -100%

60 - 79%

less than 60%

Can't tell

Not Applicable (i.e. Retrospective case-control)

RATE THIS SECTION See dictionary	**STRONG**	**MODERATE**	**WEAK**	**UKNOWN**

G) INTERVENTION INTEGRITY

(Q1) What percentage of participants received the allocated intervention or exposure of interest?

80 -100%

60 - 79%

less than 60%

Can't tell

(Q2) Was the consistency of the intervention measured?

Yes

No

Can't tell

(Q3) Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the results?

Yes

No

Can't tell

RATE THIS SECTION See dictionary	**STRONG**	**MODERATE**	**WEAK**	**UKNOWN**

H) ANALYSES

(Q1) Indicate the unit of allocation (circle one)

community organization/institution practice/office individual

(Q2) Indicate the unit of analysis (circle one)

community organization/institution practice/office individual

(Q3) Are the statistical methods appropriate for the study design?

Yes

No

Can't tell

(Q4) Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?

Yes

No

Can't tell

RATE THIS SECTION See dictionary	**STRONG**	**MODERATE**	**WEAK**	**UKNOWN**

GLOBAL RATING

COMPONENT RATINGS

Transcribe the information from the previous rating boxes. See dictionary on how to rate this section

A	**SELECTION BIAS**	STRONG	MODERATE	WEAK	UKNOWN
B	**STUDY DESIGN**	STRONG	MODERATE	WEAK	UKNOWN
C	**CONFOUNDERS**	STRONG	MODERATE	WEAK	UKNOWN
D	**BLINDING**	STRONG	MODERATE	WEAK	UKNOWN
E	**DATA COLLECTION METHOD**	STRONG	MODERATE	WEAK	UKNOWN
F	**WITHDRAWALS AND DROPOUTS**	STRONG	MODERATE	WEAK	UKNOWN
G	**INTERVENTION INTEGRITY**	STRONG	MODERATE	WEAK	UKNOWN
H	**ANALYSES**	STRONG	MODERATE	WEAK	UKNOWN

GLOBAL RATING FOR THIS PAPER (circle one):

STRONG (no WEAK or UNKNOWN ratings)
MODERATE (one WEAK or UNKNOWN rating)
WEAK (two or more WEAK or UNKNOWN ratings)
UKNOWN (three or more UNKNOWN ratings)

IF the global rating for the first reviewer is UNKNWON the paper is not reviewed by a second reviewer.

IF the global rating for the first reviewer is STRONG, MODERATE or WEAK the paper is reviewed by a second reviewer.

With both reviewers discussing the ratings: Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings? Yes / No

If yes, indicate the reason for the discrepancy

1 Oversight
2 Differences in interpretation of criteria
3 Differences in interpretation of study

Final decision of both reviewers (circle one):

STRONG

MODERATE

WEAK

UNKNOWN

Appendix F: Quality Assessment Tool For Qualitative Studies

The following tool is based on the NHS CASP quality assessment questions for qualitative studies (NHS CASP, 2006). Some minor adjustments have been made to allow for a larger amount of missing data in gray literature studies. A global rating has been added using the same approach as the EPHPP Quality Assessment Tool for Quantitative Studies (EPHPP, 2010) to allow for consistency in the analysis of qualitative and quantitative studies.

1. Was there a clear statement of the aims of the research? *Consider:* *what the goal of the research was* *why it is important* *its relevance*	Yes / No Comments:
2. Is a qualitative methodology appropriate? *Consider:* *if the research seeks to interpret or illuminate the actions and/or subjective experiences of research participants*	Yes / No / Unknown Comments:
3. Was the research design appropriate to address the aims of the research?	Yes / No / Unknown Comments:

4. Was the recruitment strategy appropriate to the aims of the research? *Consider:* *if the researcher has explained how the participants were selected* *if they explained why the participants they selected were the most appropriate to provide access to the type of knowledge sought by the study* *if there are any discussions around recruitment (e.g. why some people chose not to take part)*	Yes / No / Unknown Comments:
5. Were the data collected in a way that addressed the research issue? *Consider:* *if the setting for data collection was justified* *if it is clear how data were collected (e.g. focus group, semi-structured interview etc)* *if the researcher has justified the methods chosen* *if the researcher has made the methods explicit (e.g. for interview method, is there an indication of how interviews were conducted, did they used a topic guide?)* *if methods were modified during the study. If so, has the researcher explained how and why?* *if the form of data is clear (e.g. tape recordings,*	Yes / No / Unknown Comments:

video material, notes etc) *if the researcher has discussed saturation of data*	
6. Has the relationship between researcher and participants been adequately considered? *Consider whether it is clear if the researcher critically examined their own role, potential bias and influence during:* *formulation of research questions* *data collection, including sample recruitment and choice of location* *how the researcher responded to events during the study and whether they considered the* *implications of any changes in the research* *design*	Yes / No / Unknown Comments:
7. Have ethical issues been taken into consideration? *Consider:* *if there are sufficient details of how the research was explained to participants for the reader to assess whether ethical standards were maintained* *if the researcher has discussed issues raised by the study (e. g. issues around informed consent or confidentiality or how they have handled the effects of the study on the participants during and after the*	Yes / No / Unknown Comments:

study) *if approval has been sought from the ethics committee*	
8. Was the data analysis sufficiently rigorous? *Consider:* *if there is an in-depth description of the analysis process* *if thematic analysis is used. If so, is it clear how the categories/themes were derived from the data?* *whether the researcher explains how the data presented were selected from the original sample to demonstrate the analysis process* *if sufficient data are presented to support the findings to what extent contradictory data are taken into account* *whether the researcher critically examined their own role, potential bias and influence during analysis and selection of data for presentation*	Yes / No / Unknown Comments:
9. Is there a clear statement of findings? *Consider:* *if the findings are explicit* *if there is adequate discussion of the evidence both for and against the researcher's arguments* *if the researcher has discussed the credibility of*	Yes / No / Unknown Comments:

their findings (e.g. triangulation, respondent validation, more than one analyst.) *if the findings are discussed in relation to the original research questions*	
10. How valuable is the research? *Consider:* *if the researcher discusses the contribution the study makes to existing knowledge or understanding (e.g. do they consider the findings in relation to current practice or policy, or relevant research-based literature?)* *if they identify new areas where research is necessary* *if the researchers have discussed whether or how the findings can be transferred to other populations or considered other ways the research may be used*	Valuable / Not valuable / Unknown Comments:

GLOBAL RATING FOR THIS PAPER (circle one):

STRONG (no NO answers)

MODERATE (one NO answer)

WEAK (two or more NO answers)

UKNOWN (three or more UNKNOWN answers)

IF there are more than three questions where the answer is UNKNOWN the paper is not reviewed by a second reviewer.

IF the global rating for the first reviewer is STRONG, MODERATE or WEAK the paper is reviewed by a second reviewer.

With both reviewers discussing the ratings: Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings? Yes / No

If yes, indicate the reason for the discrepancy

1 Oversight
2 Differences in interpretation of criteria
3 Differences in interpretation of study

Final decision of both reviewers (circle one):
STRONG
MODERATE
WEAK

Appendix G: Peer Debriefing Meeting Miuntes

Meeting Minutes # 1

Date:	5 Nov 2011
Time:	4:30pm – 5:30pm Phnom Penh time (GMT+7)
Participants:	Piroska Bisits Bullen, PhD student
	Paul Bullen, Peer debriefer
Location:	Phone call
Prepared by:	Piroska Bisits Bullen

Minutes:

- I walked Paul through my oral presentation slides to update him on the final problem statement, research questions, theoretical base, and methodology for the proposal, and his role as auditor and peer debriefer.
- Paul and I discussed the tasks that he needs to complete as part of the peer debriefer role / responsibilities. This includes:
    - Reviewing the database structure, and auditing:
        - The first 5 records in the Programs table, followed by 4 other randomly selected records (10%) (total of 9 records).
        - 3 randomly selected records (10%) in the Studies table.
    - Reviewing the timeline of PD programs and studies to identify patters, particularly any related to Diffusion of Innovations theory. We will compare the patterns that Paul identifies to the ones that I identify, and work together to decide on the final set of trends / patterns that will be included in the results of the dissertation.
    - Reviewing the classification system I will develop for PD approaches and identifying any improvements or changes that need to be made.
    - Completing the Quantitative Quality Assessment Tool for the 7 programs that have a complete quantitative evaluation, and completing the Qualitative Quality Assessment Tool for the 4 programs that have a complete qualitative evaluation. These will then be compared to the tools that I have completed, and we will use discussion to arrive at an overall quality rating for each study.
- Paul clarified some questions about the database structure, such as the relationship between the Documents table, Program table and Studies table.

- Paul and I agreed on a schedule of calls over the following week to complete the required tasks. The next calls will be:
    - 9 Nov 2011, 9am Phnom Penh time (GMT+7)
    - 11 Nov 2011, 9am Phnom Penh time (GMT+7)
    - 12 or 13 Nov 2011, time to be confirmed

Meeting Minutes # 2

Date: 9 Nov 2011

Time: 9:15am – 10:15am Phnom Penh time (GMT+7)

Participants: Piroska Bisits Bullen, PhD student

Paul Bullen, Peer debriefer

Location: Phone call

Prepared by: Piroska Bisits Bullen

Minutes:

- Paul gave his initial thoughts after reviewing the data in the timeline and doing some rough analysis of patterns:
    - The distinction between programs and studies is very important.
    - Topic and location are particularly important.
    - For location it would be useful to systematically group countries into continents and socioeconomic levels.
    - For topic it may be useful to group topics into three categories: child health, adult health and other. When this is done there are lots of patterns.
- Paul and I discussed the issue of PD programs implemented in organizational settings (schools, hospitals, prisons):
    - Are they really an issue of individual behavior change like the other PD programs, or are they related to organizational issues?
    - What is the difference between PD and other organizational improvement frameworks, such as:
        - Quality improvement: Analyses a process and uses the data to improve the process using a continuous improvement cycle. Mainly used in manufacturing. Distinct from PD because it focuses on the process not the individual.

        - Best practice: Looks at which organizations or programs are the best and how they do it. Then tries to replicate that inside the organization or program. Focuses on the organization or program, rather than the individual. Meet PD criteria because the organizations / programs investigated are those that are positively deviated. But its focus is organizations / programs, rather than individuals.
        - Appreciative inquiry: Organizationally focused. Gets people talking about what works well and is successful in the organization. By telling more of those stories it hopes to get more of it happening.
        - Resilience: Looks for resilient individuals or cases and tries to learn what made them resilient.
    - There are difference conceptual models related to individuals, families, communities and organizations (of which one sub-set are programs). It would be useful to split programs into those that are individual focused, and those that are organizationally focused.
    - Is there a group of people using the term PD when they should be using a conceptual framework from organizational development?
- Paul and I discussed the importance of where the programs and studies are published:
    - It is important to look at where the documents are published, since this may affect how PD spreads.
    - Some may be published in academic journals about nutrition, some in adult health journals, some in general development publications, and some as internal documents. In theory, the organizational programs / studies would be published in organizational journals.
    - Need to add two field to the data set: One long one to indicate all the sources, and a short one to indicate the type of primary source.
- I described my initial set of categories for different types of PD approaches:
    - The method used to identify the positive deviants and their behaviors:
        - Quantitative > Qualitative: Quantitative screening followed by qualitative inquiry to identify behaviors
        - Qualitative > Quantitative: Qualitative inquiry to identify behaviors followed by quantitative survey to see if they are related to the outcome of interest

        - Individual opinion > Qualitative > Positive deviants are identified by an individual's opinion or convenience sample and then qualitative inquiry is used to identify their behaviors
        - Qualitative: A more rigorous qualitative approach is used to identify positive deviants and then qualitative inquiry to identify their behaviors.
        - Quantitative: A predefined survey is administered, and then statistical analysis is used to see which variables are related to a positive outcome. Often uses secondary data (not sure if this really counts as PD since the behaviors are predefined).
        - Staff meetings: Staff in an organizational setting have a meeting and decide who the positive deviants are, and what they are doing (not sure if this really counts as PD since it is very similar to organizational best practice / appreciative inquiry).
    - The method used to spread the PD behaviors to others:
        - Hearth sessions
        - Mass media (e.g. TV, radio, newspaper, mass events etc)
        - Peer educators / community volunteers
        - Advocacy campaign (target to decision makers)
        - Staff meetings

- Paul and I agreed that I would add the following fields to the data and we would re-analyze the patterns on the next call:
    - Topic group: Child nutrition, adult health, organizational, other.
    - Publication sources.
    - Primary publication source.
    - Length of program.
    - Continent.
    - Country income level (using World Bank High, Middle and Low income countries).
    - Category for the method used to identify PD behaviors
    - Category for the method used to spread PD behaviors to others
- The next call will be on the 10 Nov at 9am Phnom Penh time (GMT+7).

Meeting Minutes #3

Date:	10 Nov 2011
Time:	9:00am – 10:15am Phnom Penh time (GMT+7)
Participants:	Piroska Bisits Bullen, PhD student
	Paul Bullen, Peer debriefer
Location:	Phone call
Prepared by:	Piroska Bisits Bullen

Minutes:

- Paul gave his thoughts after contemplating the role of PD in organizational / institutional change:
    - Paul's search of an online management literature database for Positive Deviance only returns approximately 20 results, compared to hundreds or thousands of results for other similar organizational management terms (e.g quality improvement, best practice).
    - Paul's search of an online evaluation literature database for Positive Deviance returned no results.
    - This suggests that PD is a very uncommon term in organizational management. Perhaps it was brought into the field by people from the international development field (e.g. the Sternins) who were not familiar with the existing organizational management frameworks that essentially cover the same approach as PD.
- Paul gave his thoughts after further reviewing the full data set and patterns:
    - There is no doubt that the programs and inquiries are very different from each other on a range of variables (topics, countries, methods etc).
    - There are clearly four different stories related to the topic categories discussed on the previous call:
        - Child nutrition
        - Adult health (e.g. weight, chronic disease, pregnancy outcomes, HIV/AIDS, reproductive health – this may be a single group or multiple groups)
        - Organizational (e.g. school education, hospital infections, health services prisoner wellbeing)

        - Sociocultural (this is a new category that I add for the programs / inquiries that were primarily related to social or cultural issues rather than individual behavior change e.g. child soldiers, child trafficking, female genital mutilation, gender equity)
    - If you chart the topic category, date, program / inquiry and involvement of the Sternins as a 3D scatter plot it is very clear that the Sternins were the first people involved at the program level of all four topic categories. It is also clear that all the stories are interrelated.
    - The other variable that is important for diffusion is where the articles were published. Reducing the primary publication source to Nutrition Journal, Other Journal, Internal Report and Other also shows patterns related to topic category and program / inquiry. It seems that the majority of inquiries are published in journals, while the majority of programs are only reported in internal documents with some in journals (with the exception of the organizational programs.

- During the phone call I discovered an error in the data set for PD inquiries where the ID numbers are not aligned with the other fields. The error only affects the data set extracted from the database, but does not affect the database itself. The error was probably caused when the data were sorted in Excel, but Excel did not sort all the columns of the inquiry data because a large number of columns were blank. I will re-export the data from the database and check that it does not contain the error so that the data can be re-analyzed.
- The "Sternins" field is missing from the extracted data set. I will add it again and re-send the full data set.
- We decided it would be useful to group the topic categories into three levels so it can be compared to the other types of other frameworks that are available:
    - *Individual behavior change:* This includes child nutrition and all the other adult health topics. It seems that at this level PD deviance may be a new approach, not covered by existing theories and frameworks.
    - *Organizational / institutional change:* This includes the organizational topics (schools, hospitals, prisons). At this level PD may already be covered by existing frameworks such as appreciative inquiry, quality improvement, and best practice. It may not be adding anything new, and may be confusing practitioners by being applied here.
    - *Social / cultural change:* This includes topics focused on social or cultural change within the community rather than individual behaviors or organizations (child soldiers, child trafficking, female genital mutilation, gender equity). The examples of PD used at this level are very similar to the role model frameworks used as part of social work, and/or Social

Cognitive Theory which includes the importance of modeling the desired change. So PD may not be adding anything new, and may be confusing practitioners by being applied here.

- We discussed the methods used to identify the positive deviants and their behaviors, and which ones could be considered "good practice" in PD:
    - *Quantitative > Qualitative:* Quantitative screening followed by qualitative inquiry to identify behaviors. This could be considered good practice in PD since it systematically identifies PDs using objective quantitative data, and then identifies their unique behaviors using qualitative inquiry.
    - *Qualitative > Quantitative:* Qualitative inquiry to identify behaviors followed by quantitative survey to see if they are related to the outcome of interest. This is more systematic than using individual opinion or convenience sampling only, as the quantitative survey is used to validate the findings of the interviews / focus groups. However, conceptually it may not be as "clean" or easy to explain to community members and field staff as a quantitative > qualitative approach.
    - *Individual opinion > Qualitative:* Positive deviants are identified by an individual's opinion or convenience sample and then qualitative inquiry is used to identify their behaviors. This is a commonly used approach, possibly due to limited time and resources. It is not as systematic as using a quantitative approach to identify the PDs and could potentially miss some important behaviors or be biased by the individuals who identified the PDs. It is a second best option if time and resources are limited, and it does meet the Sternins' criteria.
    - *Qualitative Only:* A more rigorous qualitative approach is used to identify positive deviants and then qualitative inquiry to identify their behaviors. This could be considered good practice in PD since it systematically identifies PD using qualitative inquiry, and then identifies their unique behaviors also using qualitative inquiry.
    - *Quantitative Only:* A predefined survey is administered, and then statistical analysis is used to see which variables are related to a positive outcome. Often uses secondary data. We agreed that this should not count as PD since the behaviors are predefined defined by the researcher when they write the survey instrument, while the purpose of PD is to identify new behaviors that researchers and program staff may not have considered.
    - *Staff meetings:* Staff in an organizational setting have a meeting and decide who the positive deviants are, and what they are doing. PD appears to be covered by other organizational management frameworks, and so we

agreed that this method of identifying PDs in an organizational setting should not actually be considered PD.

- We discussed the methods used to spread the behaviors to other people, and which ones could be considered "good practice" in PD. It seems that the Sternins use a particular adult learning theory in their programs that must involve action leaning. However, in reality a range of approaches seem to have been used:
    - *Hearth sessions:* This is the most commonly used approach for child nutrition programs. The evaluations have shown it to be successful, and it meets the Sternins' requirement for an "action learning" initiative. Therefore, it could be considered good practice.
    - *Mass media* (e.g. TV, radio, newspaper, mass events etc): This does not meet the Sternins' requirement for an "action learning" initiative. However, there is at least one case study that used mass media to successfully spread positive deviant behaviors related to reproductive health. If future evaluations show it to be a successful method of spreading the behaviors then it could be considered an option, particularly for behaviors that cannot be taught through action learning.
    - *Peer educators / community volunteers:* This does not necessarily meet the Sternins' requirement for an "action learning" initiative. However, there are a few case studies of programs that successfully spread positive deviant behaviors using peer educators. If future evaluations show it to be a successful method of spreading the behaviors then it could be considered an option.
    - *Advocacy campaign* (target to decision makers): The only case study that used this method was for female genital mutilation. Since PD programs at the sociocultural level may be better covered by existing frameworks rather than PD, we agreed that advocacy should not actually be considered PD.
    - *Staff meetings:* PD appears to be covered by other organizational management frameworks, and so we agreed that this method of identifying PDs in an organizational setting should not actually be considered PD.
- We discussed one article which I identified that was particularly critical of PD because they felt that focusing on solutions which do not require additional resources may be used as an excuse for the community not demanding the resources that it needs:
    - Paul felt that this could be a possibility in theory, but you would need to look at the program case studies to see how often it happened in practice.
    - I noted that in the majority of program case studies PD was being implemented as part of an integrated program that normally included

investments in infrastructure, training, etc and it did not seem to be a "second best" option that was only chosen when no resources were available.

  - We agreed that it probably happens sometimes but does not appear to be common in the PD case studies.

- Paul agreed to do the following by the next call:
  - Search the organizational management databases and social work literature he has access to see how many references there are to existing frameworks that might already cover PD.
  - Start the process of record auditing and completing the Quality Assessment Tools.
- I agreed to fix the errors in the data set and re-send the data set, along with a video I have of a PD sessions at a hospital which may help identify which other organizational management frameworks may apply.
- The next call will be on the 12 Nov at 9am Phnom Penh time (GMT+7).

Meeting Minutes #4

Date:	12 Nov 2011
Time:	9:15am – 10:30am Phnom Penh time (GMT+7)
Participants:	Piroska Bisits Bullen, PhD student
	Paul Bullen, Peer debriefer
Location:	Phone call
Prepared by:	Piroska Bisits Bullen

Minutes:

- Paul sent a list of ID numbers for programs and studies which had been selected for auditing. The randomly selected ID numbers were chosen using a random number generator. Paul did not have all the documents required to audit, so I will need to send them to him.
- The list of program ID numbers for the Quality Assessment Tools needs to be updated to match the list that I sent previously so that it only includes those program evaluations for which enough information is available to complete the tools.
- Paul reviewed the structure of all the database tables and concluded that it made sense and was logical.
- Paul was not able to open the Program table in Version 8 of the database. I will save it again as Microsoft Access 2007 and resend it.
- Paul raised some concerns about the completion of the Quality Assessment Tools:
    - The case studies are cases of PD programs that have been evaluated by staff in the field. Assessing the quality of an evaluation is fundamentally different to assessing the quality of a study.
    - Both tools seem to be based on certain assumptions which are more related to the quality of studies than evaluations.
    - The Qualitative Quality Assessment Tool includes Yes / No / Unknown as answer options, when really these should be a scale. However, the comments sections of the tool are helpful in getting people to think about a qualitative study.
    - The response options for Q10 for the Qualitative Quality Assessment Tool in the database have an error. They should be Valuable / Not valuable rather than Yes / No. I will fix this a re-send it.

  - The Quantitative Quality Assessment Tool appears to be based on the assumption that the evaluation is an experimental study (e.g. randomized controlled trial, cohort, etc). Some types of study designs will not fit well into the tool.
  - I confirmed that my focus was on the global rating, rather than the individual questions. When a section of the quantitative tool was not applicable I rated it "can't tell" and gave an overall rating for the section as "moderate" so that it did not affect the global rating of the study.
  - Paul will complete the quality assessment tools in separate Word documents rather than in the database so that he is doing it independently and cannot see my ratings.
  - We agreed that the quality assessment tools are not well suited to deciding whether the program evaluations are useful or not. This is related to their design, and also the fact that the majority of the case studies do not include enough information to complete them.
  - Therefore, I will do a separate assessment of the usefulness of the program evaluations without the tools. It is possible that my conclusions may differ from the conclusions reached by using the tools.

- Paul and I discussed a quote I had found from a PD practitioner in health services who felt that the PD approach was the same as existing frameworks, but re-packages them in an easy to use way:
  - Paul and I agreed with this, and both felt that PD could be considered a way to sell or market concepts that already exist. In particular, the stories that go with PD (e.g. from child nutrition) are very powerful, particularly in an organizational context.
  - Paul noted that in both the title of the dissertation, and the quoted definition of PD the reference is to communities, not to organizations. Is it reasonable to talk about PD in an organizational setting? Or is it really about individuals in communities?
- Paul and I agreed that the variable for method used to identify PD behaviors should be split into two separate variables:
  - Method to identify positive deviants
  - Method to discover their behaviors

  In theory, any combination of these is possible, even if it hasn't been used in any of the case studies.
- Paul and I discussed the section of the dissertation regarding the role of the researcher:

  - Paul agreed that I approach the analysis from an international development perspective, while he approaches the analysis from an organizational management in developed countries perspective.
  - Paul recommended that I include in the section a narrative about why this dissertation exists, including how I first heard about PD, my initial trip to Africa and challenges, insights I have found along the way etc. I agreed that this was a good idea.
  - A similar story could be told about why any of the case studies exist and/or the story of the Sternins.
- Paul and I discussed the possibility that PD is just a marketing package that sells existing mechanisms / motivators for individual behavior change (similar to organizational change):
  - For example, all the successful programs include a strong motivation mechanism (e.g. parents are motivated to feed malnourished children), a peer pressure mechanism and a feedback mechanism. All these are important in non-PD programs too. So if the PD was removed would the program still work?
  - Paul and I agreed that applying PD to child obesity is likely to be less effective than applying it to child malnutrition. This is because the motivation for the parent is stronger when their child is malnourished than when they are overweight. Also, the feedback from seeing the child improve is faster and more dramatic for malnutrition than obesity.
- I agreed to:
  - Send the full set of documents for the programs and studies that need to be audited and quality assessed.
  - Re-save the database in 2007 and re-send it.
- Paul agreed to:
  - Update me on progress by the end of 13th Nov.
  - Try to complete the auditing and quality assessment by 20th Nov.
- The next call will be after the auditing and quality assessment tools are complete, or before then if Paul has any questions or concerns regarding this.

Meeting Minutes #5

Date: 19 Nov 2011

Time: 4:30pm – 5:30pm Phnom Penh time (GMT+7)

Participants: Piroska Bisits Bullen, PhD student

Paul Bullen, Peer debriefer

Location: Phone call

Prepared by: Piroska Bisits Bullen

Minutes:

- Paul sent the results of the audit, which we reviewed together. This included general questions / issues, specific comments on the selected programs and studies that were audited, and broader philosophical issues that he identified while reviewing case studies during the audit.
- The general questions / issues raised were:
    - *How were the country income levels determined?* These were determined using the World Bank income categories. The World Bank classified countries into High, Middle and Low income. Within these classifications there are sub-classifications (e.g. High income OECD and non-OECD, High-middle income, Low-middle income etc). Only the three broad classifications (High, Middle, and Low) were used for simplicity. Paul will not check the World Bank classifications during the audit as these were assigned using an automated lookup of the country name.
    - *How was the link to the Sternins determined?* The link to the Sternins was determined in one of three ways: 1) The Sternins were listed as authors on the document or their role in the program was described in the text of the document; 2) The program was implemented by Save the Children, which is the international NGO where the Sternins worked for many years and first implemented PD; 3) Another document not included in the case study (such as the Sternins own book) mentions their role in the program.
    - *How is the involvement of the national government determined? What level of involvement do they need to have for them to be considered "involved" (e.g. organizing organization, complementing organization)?* The national government was considered "involved" if there was any involvement mentioned at all in the documents. This includes the government organizing the program, implementing the program, training staff, linking to the program, complementing the program, or being involved as a stakeholder or in M&E.

- *What is the meaning of the stages Define, Determine, Discover etc?* These stages are taken from the document by Pascal, Sternin & Sternin (2010):
  - 1) Define the problem and desired outcome.
  - 2) Determine common practices.
  - 3) Discover uncommon but successful behaviors and strategies through inquiry and observation.
  - 4) Design an action learning initiative based on the findings.

  The stages of Implementation and Monitoring were added based on the testing at the beginning of this year. I have included all interpretations of the stages, even when they use different techniques to those underlined above (e.g. using mass media rather than action learning).
- *When is a program considered to have qualitative evaluation?* I have completed the qualitative evaluation section for any programs which explicitly include interviews, focus groups, participatory drawing etc for the purpose of evaluating or monitoring the program in any way. This includes process, outcome and impact monitoring. General comments or observations by the document author are not included as qualitative evaluation.

- Paul and I reviewed the specific comments for each program and study audited. See the Audit Log for a detailed list of these comments and the corrective actions taken. Program 6 was particularly challenging as it had many sub-programs. Paul and I agreed that the most complete sub-program (Document 135) would be used as an example to complete the program field, and the most complete evaluation would be used to complete the evaluation fields (Documents 15 and 134). I will add a special commentary on Program 6 in the discussion to ensure that it receives enough weight – otherwise it is easy to overlook this very large and complex program because all the sub-programs have been combined into only one case study.
- The main philosophical issue that Paul raised after reviewing the audit case studies in detail is that none of the case studies he reviewed were methodologically sound in how they identified the positive deviant behaviors, and what prior knowledge is required to do this. After discussion our conclusions were:
  - Many programs state that they are fully participatory and community members identified the positive deviant behaviors that the positive deviants were practicing.
  - However, it is unclear what frame of reference was used to identify these behaviors (e.g. traditional practice, western medicine etc).

  - It is also unclear what role program staff played in filtering out suggested behaviors that did not have scientific evidence according to the western model of medicine, or adding suggested behaviors that did have scientific evidence. Based on both of our experience it is highly likely that some level of filtering by program staff occurred, but this was not described in any of the methodologies.
  - There were a two examples of this issue being raised in programs related to hospital acquired infections. One in which kitchen staff suggested cleaning kitchen utensils more thoroughly, and the program staff did not tell them that it was unlikely for MRSA to be transmitted this way. In another example hospital staff suggested that all doctors should have stethoscope covers. Rather than telling them this was not evidence based, the program staff suggested they research it more thoroughly, and the result was that they found that stethoscope covers actually transmitted MRSA.

- In addition to the issue of filtering, it was also clear that the majority of programs and studies did not include community members in the first step of defining the problem. They were either clearly not involved, or the method to define the problem was not described, in which case it is assumed they were probably not involved. This is a very critical issue.
- It appears that PD may not be what it seems. It claims to be fully participatory, placing it at the top of the participation ladder with full community ownership. However, most programs do not involve community members at the most critical first step, and there is likely to be filtering of community members suggestions occurring which is not being described in the methodologies. This suggests that PD may not be at the top of the participation ladder, but rather, several rungs down.
- We agreed to add an additional field to the database to show the scale of the program using the total number of participants by order of magnitude (e.g. 10s, 100s, 1000s…100,000s etc).

Meeting Minutes #6

Date: 28 Nov 2011

Time: 9:00pm – 11:00pm Phnom Penh time (GMT+7)

Participants: Piroska Bisits Bullen, PhD student

Paul Bullen, Peer debriefer

Location: Phnom Penh, face-to-face meeting

Prepared by: Piroska Bisits Bullen

Minutes:

- Paul presented his results from the independently completed quality assessment tools. We compared his ratings to my ratings and discussed the discrepancies to arrive at a final rating. See the Quality Assessment Log for details of this process.
- Paul raise several important issues based on his experience completing the quality assessment tools:
    - All the evaluations are different, and have a different intended purpose. For example, there are impact studies, evaluations, case studies and program descriptions. All are described as "evaluations" but are actually doing different things.
    - There are no actual research studies, conducted solely for the purpose of research. This means that PD has a lack of research base, and so the program evaluations are trying to fill the research gap.
    - The questions in the two quality assessment tools have been designed to assess the quality of research, not program evaluations. This makes it particularly difficult / inappropriate to apply them to some of the program evaluations.
        - An evaluation tries to determine the value of something.
        - Research tries to build knowledge.
        - While they can be interconnected they are quite distinct.
    - There are some cases where a strict application of the quality assessment tools would result in a weak rating, but in fact it is a strong evaluation. Should we treat is as a bad piece of research or a good evaluation? We have decided to treat the document as what it claims to be, using a slightly flexible interpretation of the quality assessment tool criteria. For example, if it claims to be a program evaluation rather than a research study then it will be assessed as such, and some of the criteria may be considered not applicable.

- The evaluations are not typically explicit about what population they are generalizing to (which is probably connected to the fact they are program evaluations as distinct to research studies). For example, are they generalizing to other people in the program, other villages, etc. That question has a big impact on judgment you make about the analysis strategy.
- Some evaluations have multiple parts with different study designs. We agreed to use the study design which receives the highest quality score as the one to complete the quality assessment tool.
- The section on blinding in the quantitative quality assessment tool is not applicable to many of the studies, such as those on child nutrition, where it is impossible to conduct a double blind trial. The section on ethical approval is also not relevant for program evaluations conducted by program staffing in the same was as ethical approval for research studies by researchers independent of the program. So should these criteria be used as something which lowers the quality of the research, or should it be marked not applicable? We agreed to mark it not applicable.
- The unit of allocation and unit of analysis are often not clear. Most studies claim the unit of allocation and analysis is the individual, but in reality it is probably the community since all members of a village do not act independently of each other. The ambiguities here probably also relate to the issued noted above about the difference between research studies and program evaluations. A change in perspective could change the sample size and power of the analysis in these studies.

Appendix H: Search Results

The search results for different databases often contained the same studies, so the full text of the relevant studies was only retrieved once – the first time that it was identified.

Search Order	Database	Type of Database	Total # of results (including duplicate results)	Total # of full text documents retrieved for further assessment
1	CINAHL Plus with Full Text	Peer-reviewed	36	31
2	MEDLINE	Peer-reviewed	57	29
3	PsycARTICLES	Peer-reviewed	0	0
4	PsycINFO	Peer-reviewed	37	2
5	SocIndex with Full Text	Peer-reviewed	28	1
6	Political Science Complete	Peer-reviewed	2	0
7	Communications & Mass Media Complete	Peer-reviewed	3	1
8	ProQuest Nursing & Allied Health	Peer-reviewed	20	0
9	ProQuest Central	Peer-reviewed	84	14
10	ProQuest Health and Medical Complete	Peer-reviewed	27	0
11	ProQuest Psychology Journals	Peer-reviewed	6	0
12	ProQuest Science Journals	Peer-reviewed	5	0
13	ProQuest Social Science Journals	Peer-reviewed	5	0
14	ProQuest Research Library	Peer-reviewed	33	0
15	Health Sciences	Peer-reviewed	13	3
16	Social Science & Humanities	Peer-reviewed	85	2
17	Academic Search Complete	Peer-reviewed	42	2
19	ResearchNow	Peer-reviewed	0	0
20	Science Direct	Peer-reviewed	14	6
21	Food and Nutrition Bulletin	Peer-reviewed	17	9
22	Web of Science - Regular search	Peer-reviewed	45	15
23	Web of Science - Cited reference search	Peer-reviewed	28	1
24	Positive Deviance Initiative website	Gray literature	276	147
25	The British Library Integrated Catalogue	Gray literature	3	0
26	Walden University Library Catalogue	Gray literature	0	0
27	Copac National, Academic, and Specialist Library Catalogue	Gray literature	27	2
28	ProQuest Dissertations and Theses	Gray literature	14	8
29	Networked Digital Library of Theses and Dissertations	Gray literature	1	0

Search Order	Database	Type of Database	Total # of results (including duplicate results)	Total # of full text documents retrieved for further assessment
30	Open System for Information on Gray Literature (SIGL)	Gray literature	0	0
31	The Plexus Institute website	Gray literature	24	7
32	Positive Deviance Project Canada website	Gray literature	1	1
33	CARE International websites	Gray literature	4	0
34	Caritas International website	Gray literature	0	0
35	Family Health International website	Gray literature	1	1
36	OXFAM website	Gray literature	0	0
37	PLAN International website	Gray literature	3	0
38	Positive Deviance Resource Center website	Gray literature	1	1
39	AusAID website	Gray literature	0	0
40	DFID website	Gray literature	3	1
41	USAID website	Gray literature	157	45
42	BASICS website	Gray literature	10	4
43	CORE Group website	Gray literature	23	12
42	World Health Organization website	Gray literature	40	6
43	UNICEF website	Gray literature	35	12
44	United Nations University website	Gray literature	3	1
45	World Vision website	Gray literature	6	3
46	Save the Children website	Gray literature	6	1
47	The Power of Positive Deviance Book	Gray literature	22	10
48	Google Search Engine	Gray literature	4	4
49	Reference lists of all identified articles	Gray literature	1	1
50	Other sources	Gray literature	7	7

Appendix I: Final Sample Of PD Programs And Inquiries

PD programs included in the final sample

N	Topic	Country	Setting	Program start year	Program end year	No. documents										
						Peer Reviewed Journal Article	Program Report	Video	Periodical Article	Webpage	Manual / Training	Presentation	Book	News Article	Poster	Thesis / Dissertation	Total
1	Child nutrition	Afghanistan	Rural community	2005	2007		3										3
2	Child nutrition	Bangladesh	Rural community	1995	1995								1				1
3	Child nutrition	Bangladesh	Rural community	1997	1998	1											1
4	Child nutrition	Guinea	Rural community	2000	2007				1				1				2
5	Child nutrition	Haiti	Rural community	2000	2002	1											1
6	Child nutrition	Haiti	Rural community	1993	1997								1				1
7	Child nutrition	India	Rural and Urban	2000	2011	7	2			4	1	1		1			16
8	Child nutrition	Indonesia	Rural and Urban	2003	2008		8	3		1	2						14
9	Child nutrition	Kenya	Rural community	2004	2009		2										2
10	Child nutrition	Madagascar	Rural community	2004	2004		1										1
11	Child nutrition	Malawi	Rural community	2005	2009		1										1
12	Child nutrition	Mali	Rural community	1999	2000		2	1		1							4
13	Child nutrition	Mali	Rural and Urban	2005	2008			1			1						2
14	Child nutrition	Nigeria	Rural community	2007	2007		1										1
15	Child nutrition	Philippines	Rural community	2002	2003		1										1
16	Child nutrition	Rwanda	Rural community	2004	2006		1									1	2
17	Child nutrition	Rwanda	Rural community	2008	2010		1										1
18	Child nutrition	Tajikistan	Rural community	2004	2007		1										1

N	Topic	Country	Setting	Program start year	Program end year	No. documents											
						Peer Reviewed Journal Article	Program Report	Video	Periodical Article	Webpage	Manual / Training	Presentation	Book	News Article	Poster	Thesis / Dissertation	Total
19	Child nutrition	Vietnam	Rural community	1990	2007	7	3	1	1	1	1		2				16
20	Child nutrition	Zambia	Rural community	2008	2008		2										2
21	Child trafficking and soldiers	Uganda	Rural community	2007	2008		2	1	1			1	1				6
22	Child trafficking and soldiers	Indonesia	Rural community	2003	2008	1	2	1		1		1					6
23	Female genital mutilation	Egypt	Rural and Urban	1998	2006	1	6		2	1	1	1	1	1			14
24	Health services	UK	Hospital/clinic	2008	2008					1							1
25	Health services	Pakistan	Hospital, School	2010	2010	1											1
26	HIV/AIDS & reproductive health	Cote d'Ivoire	Urban community	2001	2003	1				1		1					3
27	Hospital acquired infections	Brazil	Hospital/clinic	2008	2009	3									1		4
28	Hospital acquired infections	Canada	Hospital/clinic	2009	2011		1	2		2	1	2		1			9
29	Hospital acquired infections	Colombia	Hospital/clinic	2005	2007		2	2				1					5
30	Hospital acquired infections	United States	Hospital/clinic	2005	2007	8	4	12	9	1		2	2				38
31	Hospital acquired infections	United States	Hospital/clinic	2006	2008	1	1				1						3
32	Hospital acquired infections	United States	Hospital/clinic	2005	2008	1	1										2
33	Pregnancy outcomes	Senegal	Rural community	2003	2005	1											1
34	Pregnancy outcomes	Egypt	Rural community	2003	2004	2						1					3

N	Topic	Country	Setting	Program start year	Program end year	No. documents										
						Peer Reviewed Journal Article	Program Report	Video	Periodical Article	Webpage	Manual / Training	Presentation	Book	News Article	Poster	Thesis / Dissertation	Total
35	Pregnancy outcomes	Guinea	Rural community	2002	2004					1	2	1					4
36	Pregnancy outcomes	Pakistan	Rural community	2002	2004	1	1		1	1	3	1	1				9
37	Prisoner wellbeing	Denmark	Prison	2009	2011	1	2	1		1							5
38	School education	Argentina	School	2003	2004		1		1			1					3
39	School education	Ethiopia	School	2004	2009		2										2
40	Smoking	Australia	Prison	2006	2008	1											1

PD inquiries included in the final sample

N	Topic	Country	Setting	Year	No. documents										
					Peer Reviewed Journal Article	Program Report	Video	Periodical Article	Webpage	Manual / Training	Presentation	Book	News Article	Poster	Thesis / Dissertation	Total
1	Child nutrition	Bangladesh	Rural community	1997		1										1
2	Child nutrition	China	Rural community	1993	1											1
3	Child nutrition	Ghana	Rural community	2007	1											1
4	Child nutrition	India	Rural community	1991	1											1
5	Child nutrition	India	Rural community	1992	1											1
6	Child nutrition	India	Rural community	1996	1											1

N	Topic	Country	Setting	Year	No. documents										
					Peer Reviewed Journal Article	Program Report	Video	Periodical Article	Webpage	Manual / Training Presentation	Book	News Article	Poster	Thesis / Dissertation	Total
7	Child nutrition	India	Urban community	2004	1										1
8	Child nutrition	India	Rural and urban	2007	1										1
9	Child nutrition	India	Urban community	2007									1		1
10	Child nutrition	Mexico	Rural and urban	2005										1	1
11	Child nutrition	Morocco	Urban community	1991										1	1
12	Child nutrition	Mozambique	Rural community	2005		1									1
13	Child nutrition	Pakistan	Rural community	2002	1										1
14	Child nutrition	Caribbean country [a]	Unknown	1976	1										1
15	Child nutrition	Vietnam	Rural community	2002	1										1
16	Child nutrition	Vietnam	Rural community	2002	1										1
17	Child nutrition	Vietnam	Rural community	2002	1										1
18	Child nutrition [b]	India	Rural community	2001	1										1
19	Chronic diseases	United States	Unknown	2011	1										1
20	Diet and weight control	Guatemala	Rural and urban	2009	1										1
21	Diet and weight control	Guatemala	Rural and urban	2010	1										1
22	Diet and weight control	United States	Urban community	2010	1										1
23	Gender equity	Brazil	Urban community	2000	1										1
24	Health services	United States	Hospital/clinic	2010					1						1
25	Health services	United States	Hospital/clinic	1995	1										1

N	Topic	Country	Setting	Year	No. documents										
					Peer Reviewed Journal Article	Program Report	Video	Periodical Article	Webpage	Manual / Training Presentation	Book	News Article	Poster	Thesis / Dissertation	Total
26	HIV/AIDS & reproductive health	Rwanda	Rural, Urban	2002	1										1
27	HIV/AIDS & reproductive health	United States	Urban community	2008	1										1
28	HIV/AIDS & reproductive health	United States	Urban community	2010	1										1
29	HIV/AIDS & reproductive health	Vietnam	Urban community	2002		1									1
30	HIV/AIDS & reproductive health	Indonesia	Hospital/clinic	2008	1										1
31	Pregnancy outcomes	United States	Urban community	2005	1										1
32	Pregnancy outcomes	United States	Urban community	2008	1										1

[a] Specific Caribbean country was not identified in the study.

[b] Study included a wider range of child development issues in addition to child nutrition, but has been classified as child nutrition for practical reasons.

Appendix J: Examples Of Completed Data Collection Forms

Document Data Collection Form

1	Document ID	126
2	Title	Child Survival (CS19) Afghanistan Midterm Evaluation Report. Excerpted sections related to Positive Deviance Approach to Child Nutrition.
3	Author(s)	Ihsan, T.
4	Year of Publication	2006
5	Source	Positive Deviance Initiative website
6	Volume / Issue	n/a
7	Page numbers	n/a
8	DOI	n/a
9	Date retrieved	4 Nov 2010
10	URL	http://www.positivedeviance.org/projects/CS19_MTE_PD_Hearth_excerpt.pdf
12	Source type	Gray literature source
13	Type of document	Program Report
14	Topic	Child nutrition
15	Country	Afghanistan
16	Comments	
n/a		

Program / Inquiry Data Collection Form (for PD Program)

1	***Sources***	
11.1 (I)	Type	Program
1.1 (I)	ID	32
1.2 (I)	Related document IDs	132, 262, 395, 396
1.3 (I)	Document types	Internal report, video, website
2	***Program Details***	
2.1 (I)	Country	Mali
2.2 (I)	Province / area	Sogola and Fulabula
2.3 (I)	Region	Sub-Saharan Africa
2.4 (I)	World Bank Income Level	Low income
2.5 (I)	Topic	Child nutrition
2.6 (I)	Objective	To reduce the prevalence of child malnutrition
2.7	Target beneficiaries	Mothers and carers in the target areas with malnourished children
2.8 (I)	Setting	Rural community
2.9	Program name	Save the Children PD/Hearth Program Mali
2.10	Program type	Stand-alone Integrated
2.11	Funding organization	USAID
2.12	Implementing organization	Save the Children
2.13 (I)	Linked to the Sternins	Yes
2.14	International organization involved	Yes

2.15	National organization involved (NGO, university etc)	Not reported or unknown
2.16	National government involved (includes any level of govt)	Not reported or unknown
2.17 (I)	Program start year	1999
2.18	Program end year	2000
2.19	Program length (years)	1
3	***Positive Deviance Steps Implemented***	
3.1 (I)	Define	Yes
3.2 (I)	Determine	Yes
3.2 (I)	Discover	Yes
3.3	Design	Yes
3.4	Implementation	Yes
3.5	Monitor	Yes
4	***Any Community Participation in Positive Deviance Steps***	
4.1 (I)	Define	Not reported / Unknown
4.2 (I)	Determine	Yes
4.2 (I)	Discover	Yes
4.3	Design	Yes
4.4	Implementation	Yes
4.5	Monitor	Yes
5	***Practical Implementation***	

5.1 (I)	Method used to identify PDs and their behaviors – description	1. All children in the target group were weighed 2. A list of well-nourished children was made 3. Wealth/poverty indicators were measured 4. Those children who were well nourished and who came from relatively poor families were identified 5. Home visits were conducted to identify the strategies that parents of PD children were using.
5.2 (I)	Method used to identify PDs – category	Quantitative screening
5.3 (I)	Method used to discover PD behaviors – category	Qualitative inquiry
5.4 (I)	Elimination of "True But Useless" PD behaviors	Not reported / Unknown
5.5 (I)	PD behaviors identified – description	- Breastfeeding until 24 months - Introduction of porridge with shea butter - Giving enriched porridge when the child starts to crawl - Child eats 6 times per day - Child does not eat food that has called on the ground - Child eats until he/she is full - No nutritional taboos - Father plays an active role in care giving - Father and grandparents supervision - Supervision of child at all times by an experienced person - Active feeding - Child lives in a stable environment - Child's hands are washed before and after a meal - Child is fully vaccinated - Gives liquids when the child has diarrhea

		- Any adult can get medical care for the child - Regular follow-up of child by father - Membership in CSCOM
5.6	Method used to spread PD behaviors to other member of the community – description	Hearth sessions in which mothers practice the PD behaviors together by cooking nutritious meals and feeding their children together.
5.7	Method used to spread PD behaviors – category	Action learning (Hearth)
5.8	Community level facilitation done by	Save the Children staff and Health Committee comprised of community members
5.9	Institutionalization activities	Not described in detail. State that it is "integrated" into the village activities, but it is unclear exactly how.
6	**Type of Evaluation**	
6.1	Includes quantitative evaluation	Yes
6.2	Includes qualitative evaluation	No
6.3	Has a long term evaluation after the program was completed	No
7	***Evaluation Report Completeness***	
7.1	Description of setting / population	Missing
7.2	Description of PD approach	Incomplete
7.3	Description of study methodology	Missing
7.4	Description of results	Incomplete
8	***Quantitative Evaluation***	

8.1	Testing	Pre and posttest
8.2	Control group	No
8.3	Randomization	N/A – no control group
8.4	Sample size	Two villages (number of children not specified)
8.5	Outcome variables	Nutrition status
8.6	Results	Results from programs in both villages revealed a decrease in moderate malnutrition from 76% to 19% and a decrease in severe malnutrition from 24% to 7% , between October 1999 to October 2000.
8.7	Results category	Positive impact
8.8	Global quality rating (from quality assessment tools)	Unknown
9	***Qualitative Evaluation***	
9.1	Methods	n/a
9.2	Results	n/a
9.3	Results category	n/a
9.4	Global quality rating (from quality assessment tools)	n/a
10	***Comments***	
Initial workshop was conducted by Monique Sternin. The PD methodology is based on workshop notes where Monique Sternin presented the PD approach, but may not actually be what was implemented.		

Program / Inquiry Data Collection Form (for PD Inquiry)

1	***Sources***	
1.1 (I)	Type	Inquiry
1.2 (I)	ID	8
1.3 (I)	Related document IDs	8
1.4 (I)	Document types	Peer reviewed journal article
2	***Program Details***	
2.1 (I)	Country	United States
2.2 (I)	Province / area	n/a
2.3 (I)	Region	North America
2.4 (I)	World Bank Income Level	High income
2.5 (I)	Topic	Pregnancy nutrition
2.6 (I)	Objective	Identify strategies that enabled some low-income pregnant women to eat healthy meals while others do not.
2.7	Target beneficiaries	n/a
2.8 (I)	Setting	Urban community
2.9	Program name	n/a
2.10	Program type	n/a
2.11	Funding organization	n/a
2.12	Implementing organization	n/a
2.13 (I)	Linked to the Sternins	No
2.14	International organization involved	n/a

2.15	National organization involved (NGO, university etc)	n/a
2.16	National government involved (includes any level of govt)	n/a
2.17 (I)	Program start year	2005
2.18	Program end year	n/a
2.19	Program length (years)	n/a
3	***Positive Deviance Steps Implemented***	
3.1 (I)	Define	Yes
3.2 (I)	Determine	Yes
3.2 (I)	Discover	Yes
3.3	Design	n/a
3.4	Implementation	n/a
3.5	Monitor	n/a
4	***Any Community Participation in Positive Deviance Steps***	
4.1 (I)	Define	No
4.2 (I)	Determine	No
4.2 (I)	Discover	No
4.3	Design	n/a
4.4	Implementation	n/a
4.5	Monitor	n/a
5	***Practical Implementation***	

5.1 (I)	Method used to identify PDs and their behaviors – description	Low-income pregnant women were recruited to the study using a convenience sampling process through the federal WIC program. Women were interviewed and completed demographic and psychosocial instruments. Information was on the women's age, educational, level, marital status, income, ethnicity, and current weight, number of previous pregnancies, number of live children, and smoking patterns. Dietary intake was based on a self-reported 24-hour dietary recall and was used to calculate a dietary score. 6 of 18 women were identified as PD. The transcripts and field notes from the interview sessions were analyzed to identify nutritional behaviors and practices of PD women compared to women with inadequate nutritional scores.
5.2 (I)	Method used to identify PDs – category	Individual choice / convenience
5.3 (I)	Method used to discover PD behaviors – category	Qualitative inquiry
5.4 (I)	Elimination of "True But Useless" PD behaviors	No
5.5 (I)	PD behaviors identified – description	Women with healthy diets knew to eat balanced meals, had family support, were willing to prepare foods that were different than other family members, and ate at home more frequently than women with unhealthy diets.
5.6	Method used to spread PD behaviors to other member of the community – description	n/a
5.7	Method used to spread PD behaviors – category	n/a
5.8	Community level facilitation done by	n/a
5.9	Institutionalization activities	n/a

6	**Type of Evaluation**	
6.1	Includes quantitative evaluation	n/a
6.2	Includes qualitative evaluation	n/a
6.3	Has a long term evaluation after the program was completed	n/a
7	***Evaluation Report Completeness***	
7.1	Description of setting / population	n/a
7.2	Description of PD approach	n/a
7.3	Description of study methodology	n/a
7.4	Description of results	n/a
8	***Quantitative Evaluation***	
8.1	Testing	n/a
8.2	Control group	n/a
8.3	Randomization	n/a
8.4	Sample size	n/a
8.5	Outcome variables	n/a
8.6	Results	n/a
8.7	Results category	n/a
8.8	Global quality rating (from quality assessment tools)	n/a
9	***Qualitative Evaluation***	

9.1	Methods	n/a
9.2	Results	n/a
9.3	Results category	n/a
9.4	Global quality rating (from quality assessment tools)	n/a
10	***Comments***	
n/a		

Appendix K: Audit Log

Date : 21 Nov 2011

Auditor: Paul Bullen, Peer debriefer

Audit Log prepared by: Piroska Bisits Bullen, PhD student

Note: N is the case study reference number used in this document. Database ID is the unique identifier used in the Microsoft Access Database.

Programs – First five programs

N	Database ID	Field	Auditor Comment	Corrective Action Taken
4	4	2.16 National government involved	Is the government actually involved in implementation or is the program only complementing government programs.	No action taken. After discussion it was agreed that any mention of government, even if was only very brief, would be counted as government involvement.
4	4	2.17 Program start year	Start date should be 2000 rather than 2001	Start date changed to 2000. The original date of 2001 was based on the first set of data discussed in the body of the text, but it appears from the table on Page 5 that program activities actually started in 2000.
4	4	8.4 Sample size	Sample size – it is unclear whether there are actually more than 400 families involved, or whether it is the same children participating each year.	The sample size description was changed to between 65 and 400 per year.

N	Database ID	Field	Auditor Comment	Corrective Action Taken
3	5	No comments		
3	6	All	Multiple studies with multiple levels of sophistication. Which part is recorded in the Program?	After discussion we agreed that document # 135 would be used to complete the program record as the most complete example of the many implementations included in this program. The most rigorous study design available (pre and posttest with control group - docs 15 and 134) will be used to complete the evaluation section.
3	6	2.17 / 2.18 Program start /end year	Is the timeframe of 2000-2011 correct?	No changes made. After discussion we agreed to use the start date of the earliest implementation and the end date of the latest implementation, which is 2000 – 2011.
3	6	2.2 Province / area	Dakshin Dinajpur should be included	Added
3	6	2.9 Program name	May be better "Banchete Shekha Process" as ICDS is also an Organization	Changed to "Banchete Shekha Process (ICDS)"
3	6	2.11 Funding organization	Cannot see a reference to USAID. UNICEF is included.	Left as is. The reference to USAID is from another sub-program but included to allow the total number of programs with funding by USAID to be calculated.
3	6	Evaluation section	Is this correct for Doc 135 or is it from another study?	No changes made. Agreed that the evaluation is completed using document 15 and 134 as they have a more rigorous study design than 135. A comment will be included to reflect this.

N	Database ID	Field	Auditor Comment	Corrective Action Taken
14	7	2.8 Setting	Setting marked as Rural/Urban, but should be rural only.	Correction due to typo. Change made.
14	7	2.16 National government involved	National government involved should be ticked.	Correction made.
14	7	2.17 Program start year	Did the program start in 2003 or 2007	Agreed to leave as is, since the body of the text suggests that while the overall program ran from 2003, the Positive Deviance part only ran from 2007. A comment will be added to the program record to clarify this.
14	7	8.4 Sample size	The sample size lists a first and second round of beneficiaries. It is unclear whether the second round was conducted in the same location, with the same beneficiaries, or in a different location.	A comment has been added to clarify this.
18	8	2.2 Province / area	Need to add Aini District	Added
18	8	2.16 National government involved	It appears that the Ministry of Health was involved, and so this field should be ticked.	Correction made. Agreed to spot check some more of the national government involved fields to ensure they are consistent.

N	Database ID	Field	Auditor Comment	Corrective Action Taken
18	8	2.17 Program start year	Did the program start in 2004 or 2002?	No change made. The overall program started in 2002, but the Positive Deviance part only started in 2004. A comment will be added to clarify this.
18	8	8.4 Sample size	Was the sample size 131 communities or 338 children?	No change made. The target group for the overall program was 131 communities, but Positive Deviance was only used for 338 children.

Programs – 10% of programs randomly selected

N	Database ID	Field	Auditor Comment	Corrective Action Taken
12	32	2.2 Province / area	Need to add Bougouni	Added
25	63	2.8 Setting	Is University or School the correct term to use?	No change made. We agreed it is only a language issue between Australian English and American English (where "School" can be used to refer to university).
25	63	2.17 Program start year	Is the 2010 start date implied from the date of publication?	No change made, but a comment has been added to clarify that the start date is assumed from the date of publication of the document.
34	66	All	This program appears to have two linked sub-programs. Which one is used to complete the program form?	Agreed that Document 28 will be used to complete the program form, as it is the latest document and includes the implementation part of the program, while the earlier document only includes the PD inquiry.

N	Database ID	Field	Auditor Comment	Corrective Action Taken
34	66	2.9 Program name	Is IMPRESS the program name, or one of the interventions?	No change made. Agreed that IMPRESS is one of the interventions, but since there is no program name in the document it will be used as the program name since it is the most memorable acronym from the program.

PD Inquiries – 10% of inquiries randomly selected

N	Database ID	Field	Auditor Comment	Corrective Action Taken
30	7	2.8 Setting	It is based in a clinic, so is "Hospital/Clinic" the best setting category.	No change made. It was agreed that all healthcare settings will be grouped together (including hospitals and clinics) since different types of healthcare settings are not necessarily comparable between developing and developed countries (e.g. a hospital in a developing country can be more similar to a clinic in a developed country).
30	7	4.1, 4.2, 4.3 Participation	Should this study be marked as including participation since PD nurses were interviewed to discover their behaviors?	No change made. We agreed that a study will only be marked as including participation if community members are involved in implementing the study, not if they are only participants in the study (i.e. the study is being done to them).

N	Database ID	Field	Auditor Comment	Corrective Action Taken
18	30	2.5 Topic	The topic is child development not child nutrition.	No change made. Agreed to include a small number of child development programs / studies in the child nutrition category for clarity. A note will be made of this in the results section of the dissertation.
15	93*	No comments		

* The actual number randomly selected was 32. Since there was no document # 32, document #31 was selected as the closest number to the one randomly chosen. Document #31 contains multiple studies, so one study (#93) was randomly selected for audit.

Appendix L: Quality Assessment Log

Date : 29 Nov 2011

Researcher: Piroska Bisits Bullen, PhD student

Peer Reviewer: Paul Bullen, Peer debriefer

Log prepared by: Piroska Bisits Bullen, PhD student

This log compares the overall results of the quality assessment tools completed by the researcher and peer reviewer, and explains the final decision on the overall quality rating for quantitative and qualitative evaluations.

Discrepancies in the answers to individual questions nearly always related to the issues discussed in the meeting minutes from 29 Nov 2011 in Appendix K.

Note: N is the case study reference number used in this document. Database ID is the unique identifier used in the Microsoft Access Database.

Quantitative Evaluations

N	***Database ID***	***Global Quality Rating***			***Comments***
		Researcher	***Peer Debriefer***	***Final***	
3	5	Moderate	Moderate	Moderate	No discrepancy between the ratings.
2	18	Moderate	Moderate	Moderate	No discrepancy between the ratings. If it is assessed as a descriptive study then a moderate rating is appropriate, but if it is assessed as an outcome study then it would be considered weak.
16	21	Moderate	Moderate	Moderate	No discrepancy between the ratings.

N	*Database ID*	*Global Quality Rating*			*Comments*
		Researcher	*Peer Debriefer*	*Final*	
19	24	Moderate	Strong	Strong	The researcher and peer reviewer differed on the interpretation of Section C (confounders) in the assessment tool. The study addressed most of the essential confounders, but did not address every possible confounder. After discussion it was agreed to assign an overall strong rating since the study did address most of the important confounders.
33	65	Moderate	Strong	Strong	The researcher assessed Section D on Blinding as unknown, but the peer reviewer assessed it as not applicable due to the fact that it would not be possible to conduct a double blind trial on this type of program. After discussion a decision was made to give a final rating of strong.
34	66	Strong	Strong	Strong	No discrepancy between the ratings.

N	*Database ID*	*Global Quality Rating*			*Comments*
		Researcher	*Peer Debriefer*	*Final*	
27	80	Strong	Moderate	Moderate	The peer reviewer raised an additional point on the research design, that although the total number of hand sanitizer uses was recorded to increase, there was no observation of hospital staff to see what they actually did with the hand sanitizers. This is a flaw in the design, and so it was agreed to give an overall rating of moderate.

Qualitative Evaluations

N	*Database ID*	*Global Quality Rating*			*Comments*
		Researcher	*Peer Debriefer*	*Final*	
3	5	Moderate	Moderate	Moderate	No discrepancy between the ratings. If it is assessed as an evaluation then a moderate rating is appropriate, but if it is assessed as research then it would be considered weak.
19	24	Weak	Weak	Weak	No discrepancy between the ratings. Although this study was described as qualitative, it actually attempted quantitative analysis on a very small sample size, which was a serious flaw in the methodology.

N	*Database ID*	*Global Quality Rating*			*Comments*
		Researcher	*Peer Debriefer*	*Final*	
23	52	Weak	Strong	Strong	The researcher applied the criteria for Q6, Q7, and Q8 in the quality assessment tool very strictly since they were not explicitly address in the report, while the peer reviewer assumed that they were implied by the study design. After discussion it was agreed to give an overall rating of Strong, given that the report is an evaluation rather than research, and as an evaluation it is strong.
22	72	Weak	Weak	Weak	No discrepancy between the ratings. This was a program description rather than an evaluation or outcome study.

Curriculum Vitae

Piroska Bisits Bullen

ACADEMIC EXPERIENCE

2007-2012	Doctor of Philosophy – Public Health (Community Health), ***Walden University,*** *Minneapolis, Minnesota, US*
2005	Honors Year – Physiology, ***University of New South Wales,*** *Sydney, Australia*
2001 –2004	Bachelor of Science – Life Science (Neuroscience), ***University of New South Wales,*** *Sydney, Australia*

PROFESSIONAL EXPERIENCE

Cambodia Health Education Media Service (CHEMS)
Technical Management Advisor (Cambodia, June 2011 – Present)

CHEMS uses creative media (TV, radio, print, online, social media) to address health and development issues. My responsibilities include:

- Developing innovative ideas for media projects, including the use of new technologies and social marketing approaches
- Proposal and report writing
- Managing relationships with donors and government agencies
- Monitoring and evaluation

Cambodian HIV/AIDS Education and Care (CHEC)
Technical Management Advisor (Cambodia, June 2011 – Present)

CHEC provides HIV/AIDS prevention, care and training services. My responsibilities include:

- Technical oversight of the Strengthening Economic Livelihood Opportunities for Low Income and HIV Positive Women (SECLO) project funded by UN Women
- Monitoring, evaluation and report writing for the SECLO project
- Proposal writing for new projects
- Training and staff development

International SOS
International SOS is the world's largest medical assistance provider, operating in over 70 countries. My responsibilities included:

Group Medical Implementation Manager, Consulting (UK, Nov 2009 – May 2011)

- Standardization and quality assurance for all consulting services globally, including public health, occupational health and corporate health
- Training of regional and country teams
- Proposal and report writing
- Managing client relationships
- Strategic planning
- Extensive travel in Asia, Europe, the Middle East and U.S. to complete projects
- Coordination of all public health projects globally while the Public Health Program Director was on maternity leave

Medical Projects Manager, R&D (Australia & UK, Oct 2006 – Nov 2009)

- Creating, piloting and implementing new global health programs
- Integrating new technologies into programs
- Research into new strategies
- Project management

Public Health Officer (Australia, Oct 2005 – Jan 2006)

- Technical research on avian and pandemic influenza
- Development of communication materials and planning tools

Management Alternatives
Consulting Analyst – Part Time (Australia, Nov 2000 – Oct 2005)

Management Alternatives is a boutique consulting agency specializing in human services and social capital research. My responsibilities included:

- Data collection and data entry
- Analysis of qualitative and quantitative data
- Preparation of charts, reports, and communication materials

COMMUNITY SERVICE

Aug 2009 – Present ***CHINACO***
Tanzania.

CHINACO operates the Chilunga Cultural Tourism program in Morogoro, Tanzania. I supported the program by setting up and maintaining the website and online booking system for cultural tours.

2006 - 2010 ***Tabitha Foundation***
Cambodia.

The Tabitha Foundation provides a range of services to the Cambodian community,

including micro-savings, well building, house building, and cottage industry. I supported the foundation by preparing email newsletters and conducting research on arsenic contamination of wells.

PROFESSIONAL ORGANIZATIONS

American Public Health Association
International Union for Health Promotion & Education
The Royal Society for Public Health

PROFESSIONAL PRESENTATIONS AND PAPERS

Bisits Bullen, P. & Cox, J. (2010). *Designing workplace health promotion for a global workforce: A case study of one multinational company operating in 25 countries.* Annual conference of the International Union for Health Promotion & Education (IUHPE).

Bisits Bullen, P. et al. (2008). *Executive Report: International SOS Case Trends in the Energy Mining and Infrastructure sector.* International SOS: London.

Participant in the 2008 World Health Organization and World Economic Forum joint working group on *"Employee Health as a Strategic Priority in India*". New Delhi, India.

Guibert, P. & Bisits Bullen, P. (2007). *Online Learning: A complementary approach to employee health education.* Annual conference of the International Society of Travel Medicine (ISTM).

REFERENCES

Available on request.