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Attitudes and Beliefs Towards Prostate Cancer Screenings and Diagnosis Among Zimbabwean Physicians

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This is to certify that the doctoral dissertation by

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Abstract

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B.S. Physiotherapy, University of Zimbabwe, 1991

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Dissertation Submitted in Partial Fulfillment

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Doctor of Philosophy

Public Health: Community Health and Education

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Abstract

Zimbabwean men at risk of developing prostate cancer (PC) are diagnosed late or not at all. A cross sectional, quantitative study was done in Zimbabwe to establish physicians' attitudes and beliefs towards PC screening and diagnosis. Descriptive statistics were obtained to determine physicians' beliefs and attitudes using the Physician Attitudes and Beliefs Questionnaire Survey. The instrument incorporated validated instruments, the Burns' Cancer Belief Scale and Physician Survey on Prostate Cancer Screening, and demographic questions to measure specific independent variables, potentially influencing attitudes and beliefs. Means and standard deviations were conducted for continuous variables for beliefs and attitudes, and frequencies and percentages for categorical variables were calculated. Data from 206 respondents were analyzed utilizing multiple regression and MANOVA analysis to determine significance. The average Belief score was 3.96 (SD = 1.04), which reflected an overall belief score falling in the neutral range of response options. Linear regression results were significant, $F(19, 178) = 2.09$, $p = 0.007$, $R^2 = 0.18$, suggesting that screening, stage of cancer, gender, training location, culture, total years in practice, and specialty accounted for 18% of the variance in Belief score. Attitude score predicted by screening *($p = .000$)*, stage of cancer *($p = .005$)*, race *($p = .000$),* and culture *($p = .020$),* was also significant. Screening and training location were significant predictors. Results will benefit physicians improve their attitudes using suggested continued education, resulting in improved screening practices and PC diagnosis. The public health system will potentially see PC death rates decline over time increasing life expectancy.

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Dedication

To my sister Dr. Patricia Tsitsi Mapanda (Nee: Mukona) I dedicate this work done on your behalf. You wanted to finish your Master's Degree in Public Health but due to unforeseen circumstances you could not. I promised you, in your hospital bed, while on life support, that I will complete it for you. I have pride in that you fought back and you are still practicing Public Health, though in a different setting. I have done all this for you, and I want you to know that, I will try to finish the work where you left it. In memory of my deceased father, who inspired me to excel in everything I do, encouraged us children and your eight wives, to stay united as a family unit, even though, through difficulties of a polygamist family structure, I thank you for what you instilled in me. Your farewell message/words to me when I left Zimbabwe, October 30, 1995 echoes in my ears in memory of your teachings. You told me, "I will not see you again. Go and serve the people as per your wish. Whoever looks like me, give them the role of a father, whoever looks like your mother, consider them for your mother, and do the same for friends you meet as they will be your siblings, and you will live a long life like me." (Mukona, D. T. M., October 29, 1995). Your lessons of life have come to fruition, and in your grave, I thank you dad, for raising me well. I can only wish you were here, to witness your own product.

Acknowledgments

While the road has been a treacherous one, robbing my wife and children of the vital family time they deserved, I thank them all for their patience, love, caring, encouragement, and supportive understanding they afforded me. Special thanks go to my wife Loice, for your pivotal role in keeping the family fire burning, while I struggled with my studies. I am proud of you. To my children Lorraine, Lawrance, and Farai, I thank you for doing well in school and for assisting me with the new technology, essential for my education.

Special acknowledgement to my committee, chair Dr. Mark White, committee member Dr. Shingairai Feresu, honors to you for your leadership. It was not easy but you paved the way for me anyway. Without you, this would not have been accomplished. This could not have been realized or accomplished, without the full support from the rest of Walden University Faculty, in all areas of academics, finance, student advising, library, and all supportive personnel, including Walden University student body network.

To my research assistant, Rutendo Remwa, thank you for your time during data collection. My gratitude goes to my data collection supervisor Dr. Julita Chideme-Maradzika, of the University Zimbabwe School of Public Health, for my research affiliation with you. It is my hope that our relationship will extend beyond, to positively impact community health, promote public health education and facilitate social change at all levels in Zimbabwe. To my mother Sarah Mukona, in your poor health, your sister, Auntie Rebecca Mukona, thank you for your prayers and raising me well. I promise you,

I will make a difference facilitating social change, serving the unfortunate like you, in our communities.

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Chapter 1: Introduction to the Study

The Prostate Cancer Case

Increasingly, men continue to suffer and many have perished prematurely due to prostate cancer (PC) worldwide, with an age-standardized PC death rate currently second to cervical cancer, at 10.9 and 21.14/100 000 respectively (http://www.worldlifeexpectancy.com/country-health-profile/zimbabwe). This is despite current evidence based research in developed nations, a better understanding of the disease, and having reliable means to test and confirm its diagnosis. While epidemiological data are available and documented in developed nations, men in developing nations continue to perish in darkness, despite the fact that PC is a detectable and treatable disease when diagnosed early before metastasis, Stage IV & V. An extensive literature search shows a lack of research done locally in Zimbabwe on physician attitudes and beliefs towards cancer in general. There is a lack of cancer registries in many parts of developing nations (Jedy-Agba, et al., (2012), complicating the burden of prostate cancer, for the incidence is not well understood in countries like Zimbabwe due to lack of research. Many die without knowing PC is the cause of their suffering, and this in many cases is complicated by myths, culture, normative values, and traditional beliefs related to PC and sexuality in men. However, there have been very few studies to make conclusions about this, hence, this study will open avenues to answer specific questions related to physicians' attitudes and beliefs towards prostate cancer specifically.

The American Cancer Society recommends physicians discuss with their patients and encourage screening for PC as early as 40 years of age, for those at risk of PC as well as generally at 45-50 years of age for all men (M2 Pharma, 2013). PC is a disease that affects men at approximately 40 years of age and upwards, though there are cases that have been reported <40 years of age. Precursors to the diseases are still to be understood though there are genetic factors believed to play a part in the development of the disease. Because there are available tests to identify possible sufferers of PC, there should be other reasons why men die from PC without being screened early and from a PC diagnosis made at terminal stages of the disease, other than the known reasons that include but are not limited to: lack of health care due to healthcare disparities; poverty; lack of insurance coverage; and lack of healthcare personnel and inadequate health care facilities.

There is reason to believe that those who are given the role and honor of societal responsibilities over populations' health affairs and are believed to be experts by society - the medical professionals (physicians) - may have something to do with the failure to identify sufferers of PC early and at a stage, when the disease can be treated and rehabilitation instituted successfully. Attitudes and beliefs of these professionals influence not only their behavior as individuals in their practice of medicine, but those of their patients as well. This impacts PC intervention outcomes and warrants a deeper understanding of attributes that may lead to the increase in death rates, particularly in countries like Zimbabwe, where the disease, as well as lack of health services in general, has been reported to be taking its toll.

While it is interesting and encouraging to know that Zimbabwe is one of only two countries in Africa that has an established cancer registry, it is also interesting to establish why its male population age >40 is enduring an increase of 6.4% PC cases annually (Chokunonga, Borok, Chirenje, Nyakabau, & Parkin (2013). Complicating the PC case in Zimbabwe is the low life expectancy (LE) for men at birth which stands at 53.3 years (World Health Rankings, 2014), the age at which the majority of men should be screened for the disease. According to information published by World Health Rankings (2014), the LE increases with age ranging from 66.0 (LE) at age 40 to 80.9 (LE) at age 70, which is the recommend age range group to be monitored for PC, as recommended for PC screening by the American Cancer Society due the fact that this age range has an estimated minimum 10 year survival rate (M2 Pharma, 2013).

Screening for PC is a vital step that leads to early identification of those at risk and sufferers of the disease. From a report by the United Nations Human Development Report (2011), Zimbabwe has an overall literacy rate (LR) of 90.7%, with males rating higher than females, 94.2 % and 87.2% respectively. Considering that educationally, Zimbabweans tend to have a high LR (Figure 1.) compared to many African nations; one can assume the general male population understands the need to follow established PC screening recommendations and guidelines, if and when informed by their primary care physicians, attributed to their high literacy rate. Existing evidence suggests Zimbabweans are comparatively more educated when looking at world LRs, and better than their African counterparts (Figure 1.), and they rank second to South Africa in the whole African continent (United Nations Human Development Report, 2011). Considering that

the global literacy rates (GLR) for ages 15 and over in 2011 was 84.1%, Zimbabwe was higher, with 90.7% LR and is still high when the rates are compared by gender, surpassing the GLR recorded at 88.6% and 79.7% respectively for males and females.

Recent data by the Zimbabwe National Statistics Agency (2012) shows a much higher literacy rate of 97% as of 2011(http://www.zimstats.co.zw, January 5, 2014). This calls for responsibility by physicians to educate men, as well as perform and recommend appropriate tests per international guidelines and standards for PC screening and diagnosis, as described by Brooks, Wolf, Smith, Dash, & Guessous (2010). Informing men gives them aides to health decision making tools and promotes PC screening behaviors through physician support and counsel (Brooks, Wolf, Smith, Dash, & Guessous, 2010). The authors suggest strategic, culturally appropriate channels to reach out to men as well. Hence, the need to establish the attitudes and beliefs of Zimbabwean physicians and their relationship with the following variables:

- Screening patterns of most Zimbabwean physicians
- Stage of disease at diagnosis by most physicians
- Professional gender
- Training school
- Specialty
- Culture and social influence
- Age and years of experience as a physician

The purpose of this study was to investigate and establish the relationship between and among variables, through an unearthing the underlying attitudes and beliefs

of Zimbabwean physicians, using a self-reported questionnaire survey. Below is a world map showing the world literacy rate (LR) with Zimbabwe ranked in the second group of countries worldwide.

World Literacy Rates

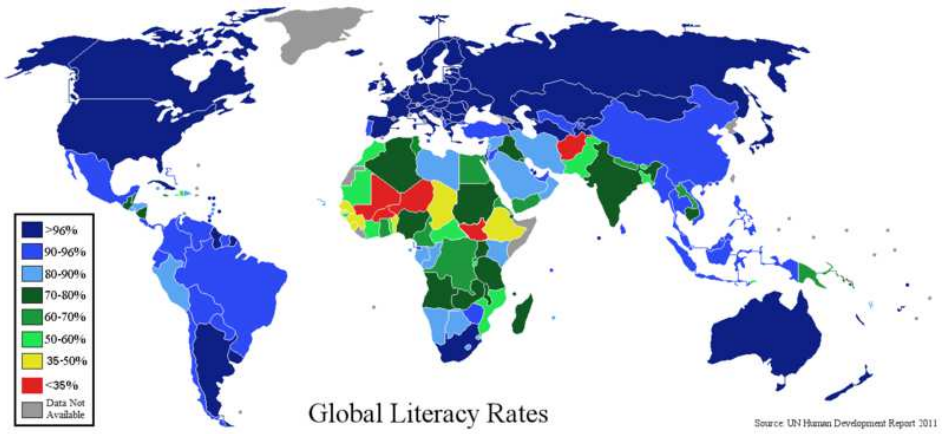

Figure 1. Global literacy rates by country (Source: United Nations Human Development report, 2011)

Problem Statement

Prostate cancer (PC) has been found to be on the rise in Zimbabwe, with an incidence rate of 28.3% in 1990 and 38.1% in 2002 (Chu, Ritchey, Devesa, Quraishi, Zhang, & Hsing, 2011). Of these cases, 56-67% was microscopically verified, which leaves a number of questions to be answered as to why the rest were not identified, since new diagnostic capabilities and standards are available to physicians. Statistical data from 1991 to 2010 show that PC incidence increased by 6.4% in Zimbabwe's black population (Chokunonga, Borok, Chirenje, Nyakabau, & Parkin, 2013), raising great public health concerns for a country that is small and already depressed economically with a population of 13 061 239 (Zimbabwe National Statistics Agency (2012).

According to the Cancer Association of Zimbabwe (CAZ), 60% of all new cancer cases seen in Zimbabwe were related to HIV/AIDS, which though under some control, has seen many people perish (http://www.cancerassociation.co.zw/news/resolutions-national-conference-cancer-prevention-and-control). This complicates PC diagnosis and calls for even better ways to reach to the diagnosis of the devastating disease, other than the current rectal digital examination (RDE) and prostate-specific antigen (PSA). Compounding diagnostic problems of the PC case even further is the blurring of the diagnosis as well as the intervention processes, calling for an intended approach by physicians and those in the public health sector to ensure their approach endorses and promotes a health seeking behavior in all men of appropriate ages. Appropriate differential diagnosis is imperative in all patients seen by physicians, not only for treatment, but also for clarity of causes of death and mortality rates classification. What drives screening and diagnosis are attitudes and beliefs of the patients and physicians (Woolf, & Rothemich, 1999). The authors' emphasis is on making sure that patient's decisions, guided by knowledge of PC from their physicians be of paramount importance in the process of decision making to inform patients of the relative benefits and side effects. This is also evidenced by the fact that educating women about PC may help ease the detection process of PC in their spouses, as well as reduce the burdening impact of the disease on affected families (Blanchard, Proverbs-Singh, Katner, Lifsey, & al, e., 2005). Hence, physicians should make responsible decisions about when to screen men of the disease.

The CAZ established that, of the 7 000 cancer patients seen in Zimbabwe yearly, only 700-1 500 patients are treated, giving rise to the question: What happens to the remainder, and why do they not seek treatment/relief? Unfortunately the CAZ lacks a breakdown of the cancers by type and site, and generally lacks data on PC statistics. The role physicians' attitudes and beliefs play is paramount in ensuring the public is well advised in order to influence health seeking behaviors. How do the physicians' attitudes and beliefs affect and influence the Zimbabwean men in making PC screening decisions? How do these attitudes and beliefs relate to the stage of diagnosis of PC, to symptoms, and to the increasing deaths rates? It is the intention of this research study to attempt to provide some answers to these questions, as they should be asked and answered.

The health cycle does not end with knowledgeable physicians' explanation of causality, but ends only when comprehensive services are provided to affected individuals to avoid breaking the healthy cycle, utilizing explanations about the health ease/disease continuum called for by Antonovsky (1996, p. 15). Cancer victims suffer without knowing, going through mental anguish, stigmatization, and lacking timely diagnosis and treatment (Sepulveda, et al., 2003). This can be avoided by the primary physicians' role in early screenings and diagnosis of PC, ensuring patients are well educated through appropriate education and counselling services to allow them to make conscious informed decisions (Kearney, Miller, Paul, Smith, & Rice, 2003). This satisfies the Salutogenic Health Model attributed to Antonovsky (1996), the theoretical foundation from which this study will be based (Figure 2).

Significance of the study:

This study will help to establish the following objectives:

Objective 1. Establish current Zimbabwean physicians' attitudes and beliefs towards PC screening and diagnosis.

Objective 2. Reveal physicians' screening practices, diagnostic patterns, and relationships, based on physician self-reported trends extrapolated from physician beliefs and attitudes, demographic data, gender, training schools, culture, age, practice experience, specialty, and stage of diagnosis of PC in patients compared against internationally recognized standards.

Objective 3. Establish statistically significant differences, if any, in Zimbabwean physician practices based on whether physicians were locally or foreign trained as a cultural attribute/dimension of cultural training / background to their beliefs' originations.

Objective 4. Establish relationships, if any, among and between variables of physician gender, age, practice experience, qualifications, cultural beliefs and attitudes, and cultural training / background (locally or foreign trained).

Objective 5. A secondary objective of the study is to establish the existence/non-existence of guidelines for screening, diagnosis, treatment and rehabilitation of prostate cancer in Zimbabwe and use this to establish or improve conditions if any are available.

Established statistical facts from the study will help facilitate social change by ensuring that men receive appropriate care from their physicians once an understanding of physicians' beliefs and attitudes is established. This will help extend lives of victims of PC through promoting establishment of appropriate screening methods, diagnostic recommendations and establishing national PC care standards.

Outcomes of the study

Study outcome 1. Establish better understanding of the beliefs and attitudes towards PC screening and diagnosis among general practitioners in Zimbabwe

Study outcome 2. Once the attitudes and beliefs are identified, it will be easier to make associations, if any, with the rising trends in PC's death rates, incidence, prevalence, screening routines, and stage of diagnosis patterns.

Study outcome 3: Recommend intervention programs to increase PC screenings using input from the study using study findings.

Study outcome 4. Influence policy through developing appropriate continuing education programs for those already in the field and influencing curriculum development in medical schools locally and internationally for new students employing study findings.

Results and conclusions will be shared with study participants, the government of Zimbabwe, medical training institutions nationally and worldwide,

medical education curriculum developers, the public, the media, and health organizations as main stakeholders. Results will be used to influence social change, altering the practicing physicians' attitudes and beliefs, towards creating conducive environments, where patients can reveal signs and symptoms of PCs to their physicians, through provision of generalized resistance resources (DRRs) and eliminating the generalized resistance deficits (DRDs) as recommended by Antonovsky (1987) illustrated in Figure 2. This will be done with a focus and an objective to influence public health policies locally and globally, through policy modification, updating medical school curriculums, and enforcing post professional education standards for recertification purposes, through increasing Antonovsky (1987)'s GRRs (p. 15) in men, to encourage adoption of health seeking behaviors. Most important is that the social change to be accomplished through influencing policy changes, resulting from the evidence supporting grassroots empowerment, using concepts and attributes of the salutogenic model as described by Mittelmark & Bull (2013), whose opinion is to promote the concept of salutogenesis research, in supporting human health and wellness.

Background

There is very little research done locally in Zimbabwe on attitudes and beliefs towards cancer, hence reference will be made to research done elsewhere in order to understand issues around PC. PC screening knowledge was found deficient in African American men, as was awareness that PC can be asymptomatic in its early stages (Blanchard, 2005). Negative attitudes towards screenings were greatest

in those with no exposure to health services, especially amongst the medically underserved (Shaw, Vivian, Orzech, Torres, & Armin, 2012), a situation similar to Zimbabwe. This explains the lack of a sense of coherence (SOC), explained by the salutogenic model (Antonovsky, 1996) shown in Figure 2 as emphasized by Mittelmark & Bull (2013).

Physicians' attitudes may prohibit timely screenings, prevent early detection, delaying treatment, and interfere with the rehabilitation process and progress (Kearney, Miller, Paul, Smith, & Rice, 2003), increasing PC death rates. There is need to establish reasons why patients are diagnosed late in terminal stages of PC, besides access to medical care, given that physicians have adequate training and resources (Bibb, 2000; Lind, 1998). Assuming physicians are well trained, it becomes a necessity to establish their attitudes, beliefs, and cultural factors as these are major determinants of their behaviors, screenings patterns, and diagnostic practices. How this is affected by their culture, educational training institutions, and curriculum is interesting, as this is a factor that can be changed or influenced by policy and planning. There is a need for structuring PC care in Zimbabwe which should begin with screening and diagnosis standards by physicians. Screening guidance was found lacking among medical students and resident physicians, pointing to lack of appropriate referral systems and counseling services in Mexico City (Villarreal-Garza, Garcia-Aceituno, Villa, Perfecto-Arroyo, Rojas-Flores, & Leon-Rodriguez, 2010), subjecting victims of PC to unprecedented complications. This has not been established for Zimbabwe. Different factors contributing to PC

screening and diagnosis need to be identified besides patient related issues (Amorim, Barros, Cesar, Goldbaum, Carandina, & Alves, 2011). Does the rise in trend of cancer deaths rates in Zimbabwe match the decline in PC screenings described by Pogodin-Hannolainen, Juusela, Tammela, Ruutu, Aro, Maattaqnen, & Auvinen (2011), in a study among Finnish physicians from 1999 to 2007? The relationship remains to be answered by this study. Cultural sensitivity was recommended for physicians as a necessity in Oklahoma, U.S. and a consensus was reached that early screening of PC decreased its mortality and morbidity rates (Chan, Haynes, O'Donnell, Bachino, & Vernon, 2003).

Studies evidence suggest that early clinical diagnosis of PC has a survival rate of 95% compared to a survival rate of 30% in late diagnosis, which is considered diagnosis after metastasis (Blanchard, Proverbs-Singh, Katner, Lifsey, & al, e., 2005). The authors suggest that early diagnosis provides a variety of treatment choices compared to the radical ones chosen as a desperate solution. It is also important to consider the role science and evidence based policy plays in the role PC screening has on physicians' beliefs and attitudes, as this affects individual decision making processes in physicians, due to the prevailing controversies between the benefits and side effects of some screening practices /methods (Woolf, & Rothemich, 1999).

Theoretical Framework

The study is primarily quantitative in nature, seeking to gather convincing statistical data, pertinent to PC screening and diagnostic patterns among

Zimbabwean physicians. Realizing that humans behave in ways determined by reason, intention, attitudes, beliefs, and value systems, it is logical and rational that we determine why PC sufferers are diagnosed late or not at all, from what is not well studied and known, physician attitudes and beliefs towards PC. The study was based on the theory of reasoned action (TRA) framework (Appendix E), to explore the relationships among all these variables, as explained by Sable, Schwartz, Kelly, Lisbon, & Hall (2006), who explored physicians' emergency contraceptives prescribing patterns. This takes into account that physicians are trained and concepts are ingrained in them to behave in certain accepted ways due to induced conscience, through educational curriculums. The health belief model as well as the Transtheoretical model would explain patient's behaviors and would not be adequate to explore the physicians' attitudes and beliefs towards PC screening and diagnosis hence application of the TRA. TRA was wrapped around the emerging health promotion theory, the salutogenic framework (SF) by Antonovsky (1987) (Appendix D). The constructs of the TRA can be linked to Antonovsky (1987)'s Salutogenesis, explaining how general resources deficits (GRD)s and general resistance resources (GRR)s play a major role in people's health and wellness (Figure 2), which can be influenced through physicians' roles in primary care. Antonovsky argues and attempts to answer the question, how people remain well and cope through illnesses, with a focus of managing stress.

Likert scales were utilized in the majority of questionnaires and where appropriate, some qualitative open ended questions were applied/utilized to extract

and unearth hidden truth. Burns (1981)'s instrument was used in section one of the questionnaire, to establish physician beliefs. The second section of the survey (Volk, et al., 2013) was employed to unreal/ unearth physicians' attitudes, while the third section, demographics, dealt with each individual variables; screening practices, stage of PC diagnosis, professional gender, training school, specialty, culture, age and years of experience.

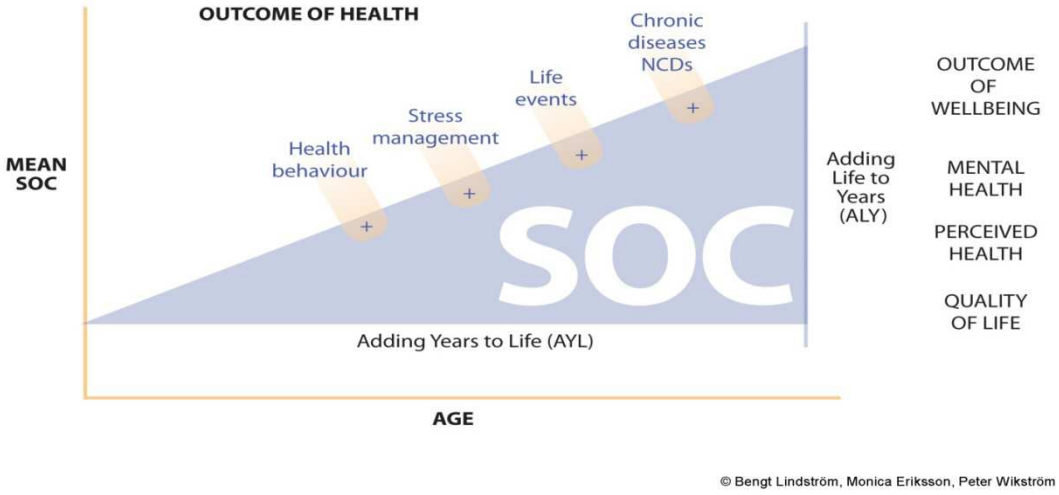

Figure 2. Salutogenesis: Explanation of sense of coherence (SOC), age and outcome of health in populations

Figure 2 demonstrates how an increase in sense of coherence (SOC) adds more years to life, explained through influences and improvements in human behavior, ability to manage stress and life events as well as mange chronic diseases. This is possible through physicians' role, in helping men manage the GRR effectively as well as reduce the effects of the GRD through their physician patient relationship/interaction and education. All these lead to preferred outcomes of any public health program/system, which include but are not limited to outcomes of

wellbeing, good mental health, sound physical health and leading a good and healthy quality lives through enlightening individuals with truths.

Research Questions

The study attempted to answer the following research questions, one through four (RQ1-4). However, while these questions may be pertinent from a researcher's planning perspective, antecedent questions may have arose during the process, which required modification of the research plan and process. Such developments were addressed appropriately by the researcher (myself), guided by the research committee as the study progressed but none were of significance to affect the study. The following is a list and explanation of the research questions:

RQ1. What are the current attitudes and beliefs among Zimbabwean physicians towards PC screenings and diagnosis?

This question will establish current attitudes and beliefs among Zimbabwean physicians towards PC screenings and diagnosis.

RQ2. Do screening practices, stage of PC diagnosis, professional's gender, training schools, specialty, culture, age and years of experience predict physicians' attitudes and beliefs towards PC?

This question will establish whether screening practices, stage of PC diagnosis, professional's gender, training schools, specialty, culture, age and years of experience predict physicians' attitudes and beliefs towards PC.

RQ3. Are there statistically significant differences in attitudes and beliefs in Zimbabwe on PC screening, between locally trained versus foreign trained physicians?

This question will establish whether there statistically significant differences in attitudes and beliefs in Zimbabwe on PC screening, between locally trained versus foreign trained physicians.

RQ4. Are there statistically significant differences in Zimbabwe in the proportion of physicians following professionally established guidelines by where they were trained (local vs. foreign)?

Finally this question will establish whether there statistically significant differences in Zimbabwe in the proportion of physicians following professionally established guidelines by where they were trained (local vs. foreign). It is true that Zimbabwe pools its physicians from various parts of the world and it will be interesting to establish where they are trained and how this affects beliefs and attitudes.

Research Hypothesis

The following hypotheses aligned with the research questions (RQ) 2-4 above: $H1_0$ and $H1_a$ align with RQ2; $H2_0$ and $H2_a$ with RQ3; $H3_0$ and $H3_a$ align with RQ4. $H[1, 2 \& 3]_0$ represents the null hypothesis while $H[1, 2, \& 3]_a$ represent the alternate hypothesis respectively. RQ1 seeks to establish the attitudes and beliefs among the Zimbabwean physicians cumulatively and will be measured descriptively by statistical analysis against the seven independent variables.

$H1_0$: Screening practices, stage of prostate cancer diagnosis, physician's gender, training schools, specialty, culture, and years of experience do not predict physician's attitudes and beliefs.

$H1_a$: Screening practices, stage of prostate cancer diagnosis, physician's gender, training schools, specialty, culture, or years of experience predict physician's attitudes and beliefs.

$H2_0$: There are no statistically significant differences in attitudes and beliefs of prostate screening for physicians in Zimbabwe by where they were trained (locally vs. foreign).

$H2_a$: There are statistically significant differences in attitudes and beliefs of prostate screening for physicians in Zimbabwe by where they were trained (locally vs. foreign).

$H3_0$: There are no statistically significant differences in the proportion of physicians following professionally established guidelines by where they were trained (locally vs. foreign).

$H3_a$: There are statistically significant differences in the proportion of physicians following professionally established guidelines by where they were trained (locally vs. foreign).

Nature of the Study

The study was a cross sectional quantitative survey of the Zimbabwe's approximately 800 practicing medical doctors, to establish their current practices and how they relate to the following attributes:

- Their beliefs and attitudes towards PC screening and diagnosis

- Relationships between these variables with physicians' training, screenings practices, and diagnosis stage of PC in their patients
- Relationship between culture and screening practices in males versus female physicians if any
- The role played by training schools, culture, age, gender, culture, and practice experience in influencing attitudes and beliefs towards PC as attributes and proxy components influencing physician behaviors

Sources of Information or Data

The study is primarily based data collected by the researcher for statistical and descriptive analysis. Data was collected from study participants using the researcher-designed questionnaire survey instrument, the PABQS (Appendix A), administered in person by the researcher and through survey monkey in eligible areas where technology infrastructure was applicable and feasible. The researcher travelled to Zimbabwe for the data collection process, and trained a research associate/ assistant to administer the questionnaire, visited Zimbabwean government hospitals, physician's private offices and clinics, and private clinics owned by faith based organizations and private companies to administer the questionnaires. This was done to ensure timely returns as the country's communication systems, internet, and postal systems/services are not always reliable and could limit or reduce response rates and return of questionnaires. Collected data may be compared to existing secondary data for analytical purposes and to add value to the discussion of the established results, showing patterns of PC screening and diagnosis in Zimbabwe and where data is already available worldwide. Data may also be obtained

from the Zimbabwe National Statistics Agency (ZIMSTATS), Zimbabwe Medical Society, National Cancer Society of Zimbabwe, and other relevant cancer registries for discussion purposes but a search indicated no such data was available at the time.

Chapter 2: Literature Review

Prostate Cancer

An understanding of PC as a disease is necessary for effective management and intervention from both the professional and patient perspective. This is the responsibility of every credible medical school through its curriculum during the training of every medical student. Established data suggest PC to be the most common cancer and the second most cause of death among men of African descent in the U.S. (Richardson, DeWittt Webster, & Fields, 2004). This mirrors statistics and the current situation in Zimbabwe (ZIMSTATS, 2012), though specific Zimbabwean studies are very limited. Cancer is the most feared disease in modern society (Kearney, Miller, Paul, Smith, & Rice, 2003), hence its negative impact on society and the negative perceptions. The fear and negative attitudes amplifies unrealistic myths, attitudes, and beliefs, impacting management of cancer in general. Richardson, DeWittt Webster, & Fields (2004) determined that fear of the disease, denial, myths, psychosocial barriers, apathy, knowledge deficits and inadequacy were factors contributing to the burden of PC increased incidence and death rates in African American men. How these affect physicians is not really known, the purpose of this study is.

Negative attitudes were established among oncology health care professionals in the United States (Kearney, 2003), affecting the way cancer is managed in general. Hence, the need to understand physicians' attitudes and beliefs in Zimbabwean physicians, which is the subject of this study. Lack of psychosocial skills and knowledge were established in oncology health care professionals by Jones, James, Rodin, & Catton

(2001), who in their study suggest continuing education as a remedy. It makes great sense that 73% of the participants indicated a need for continuing education and training (Jones, James, Rodin, & Catton, 2001). The need for patients to present PC signs and symptoms timely and appropriately does not necessarily come from the physicians' knowledge of the disease alone but emanates from an understanding of what can go wrong within the human body, the mind, and what can possibly be done to avert the negative consequences, effectively communicated to patients. The fear and negative attitudes health care professionals have raises the question of how they reach and communicate with men who may be victims of PC and cancer in general.

Beliefs and attitudes affect the way both physicians and patients perceive PC as a threat to men's health, which in turn affects the way the disease is managed. What separates the two is the sensitization physicians go through in medical schools, through which they are expected to give to patients in general to build up the general resources resistance (GRRs) and reduce the general resources deficits GRDs as explained the Salutogenic Health Model (Appendix D). While the world has struggled for solutions and established means to detect PC presence, by employing the theory of reasoned action (TRA), the comprehensiveness of the Salutogenic Model is necessary at any stage of any health threat, as it allows both parties (i.e., the patient and the health professional) to focus on important attributes of wellness, balancing the (GRDs) and the (GRRs) attributes of wellness (Antonovsky, 1996) as illustrated in Figure 2 above. Through the balance, one can avert the unwanted consequences within and around as an individual, as

part of society, or as part of a community, regardless of class, gender, race, or the environment - thus enabling sustenance of life in a healthy manner.

Perception of one's success and anticipation of a healthy life is an attribute of one's basic feelings about who they are, what they do, how they are perceived, directed by their morale drive, beliefs, attitudes which are based on sociocultural values. However, there is need to know that this is also based on how we are raised communally and this involves both patients and their physicians. Hence, we all are affected by cancer and how it is ill-understood, which brings uncertainty and unsurpassed fear of the unknown. While it is known how this affects patients, how does this affect those who take care of them, their physicians? While this study may not provide all the answers, it will position society to understand how physicians themselves perceive and view PC in general, which will provide medical schools with additional tools to improve curriculums and improve physician patient relationships in PC screening and diagnosis.

A study by Levi, Kohler, Grimley, & Anderson-Lewis (2007) yielded results that indicated significantly strong relationships between attitudes and PC information seeking behaviors in men from their physicians. In the same study, a weaker correlation was established between subjective normative values and PC information seeking behaviors in knowledge deprived men. However, this cannot be regarded insignificant because of the role and position physicians are given by society, to be stewards of people's health. In a compressive paper, Morgan & Ziglio (2007) explained how there should be a shift from the deficit theoretical approaches to improving community health alternatively investing in modern assets based theoretical perspectives, bringing the notion of communities and

individuals' abilities to establish problems and actively engage in solutions as a complimentary processed, rather than putting the blame on then. Antonovsky's GRDs and GRRs can explain how men can be influenced by their physicians to survive PC.

Chapter 3: Research Methodology

Introduction

A cross sectional quantitative study was conducted in Zimbabwe to establish physicians' attitudes and beliefs towards PC screening and diagnosis. Effort to obtain and collect the most accurate and relevant data by the researcher was done through active data collection from the field, using the Physician Attitudes and Beliefs Questionnaire Survey (PABQS) (Appendix A). The instrument was designed by the researcher incorporating validated instruments, the Burns' Cancer Belief Scales (BCBS) and the Physician Survey on Prostate Cancer Screening (PSPCS), as well as researcher-designed demographic questions, meant to measure specific independent variables which potentially affect screening and diagnosis of PC as assumed.

Study Design

The study was a cross sectional quantitative study conducted among approximately Zimbabwe's approximately 800 registered and practicing physicians. The theoretical foundation employed was the TRA, considering how physicians undergo intensive education to educate, inform, train, conscientize, and to be afforded title of stewardship of the general health of the population. Hence, what they do and how they perform is guided by their inner feelings, beliefs, and attitudes, an aspect of human behavior that requires to be established considering that it affects the way patients behave. Aligned with the TRA is the Salutogenic Health Framework emphasizing on ensuring populations remain health through community resources and managing

themselves, which can only happen if and only if they are well-informed and believed the advice offered to them.

It is therefore important to consider how patients perceive their physicians as major decision makers for their personal health. This was established through the survey study design conducted by the researcher in the field and through Survey Monkey for easier access to respondents.

Participant Protection

As with any research, all data collected was strictly confidential and protected using the most stringent means. There was no personal information collected and all questionnaires were coded to respondents, to make sure only one questionnaire was send to each participant. Each questionnaire had a page attached, which was detached from the questionnaire as soon as the participants were done completing the questionnaire, for those participants that who would be willing to provide personal information for research and results correspondence purposes only. No data was or will be shared with any other organization, except solely for purposes of data analysis by the research team. It is important to emphasize that participation was strictly voluntary with no financial benefit for participants.

Sampling Method and Rationale

A random sample of 103 respondents (n = 103) was recommended using the G*Power 3.1.94 version calculator. This was done taking into account and considering the statistical analysis and calculations used for data analysis (See Data Analysis

Section). However, more than the recommended minimum was met to increase the power of the results, as well as plan for data attrition and partial data. The following shows how sample size was calculated using the G*Power 3.1.94 version calculator. In order to minimize sampling error sample size was be increased by 25%.

Sample Size Determination

G*Power was used to determine the sample size necessary for meaningful, reliable, and valid results. Considering an alpha of 0.05, a confidence interval of 95%, a generally acceptable power of .80, a minimum sample size of 103 participants (n = 103) was necessary to achieve statistical validity. The researcher pursued a sample of an additional 25 percent over the required amount, totaling to a final desired recommended sample size of 129 participants which was surpassed. However, the researcher designed the study in such a way to maximize response rate, and to increase the sample size representativeness to the Zimbabwean physicians' population size by maximizing effect size. A total of 208 respondents participated in the survey and 206 were found suitable for final analysis using the recommended statistical analysis methods surpassing recommended sample size for meaningful, reliable, and valid results.

Participants Eligibility Criteria

In order to meet criterion for inclusion into the study, participants had to be physicians registered and actively practicing medicine in Zimbabwe as individual private clinics, group private practice owners, actively working for FBO hospitals, private company owned health care centers, and/or all government health care facilities in the

country. A random allocation was done using the ZIMSTATS recommended sampling method, in which the researcher had no influence/blinded to those receiving the instrument. All participants spoke English proficiently and either read or write the language without an interpreter. Only physicians located in Zimbabwe and its institutions participated in the survey and had to be in Zimbabwe at the time of the instrument administration. Male and female physicians had an equal chance of inclusion in the study. Whether local and foreign trained, it was not known by researcher until results analysis stage. Sampling was done using ZIMSTATS recommendations, using their knowledge of the physicians' distribution from the Census Bureau of Zimbabwe.

Study Location Demographics

The study was conducted in Zimbabwe, a land locked country in Southern Africa, with a population of proximately 12 973 808 people of which 6 234 931 are male and 6 738 877 are women, as established in the 2012 census (ZIMSTATS, 2012). According to Central Intelligence records, of the 55 to 64 years age bracket, 3.5% of the total population, only 180,554 were men versus 318,410 women. The population adults >65 years age range was only 3.6% of the population, with only 193,385 are men and 293,410 are women (https://www.cia.gov/library/publications/the-world-factbook/geos/zi.html). Men 40 to 65 make a very small percentage male population in Zimbabwe though it is not easy to point at figure with certainty due to unreliable statistics. There has been more rural-urban migration after independence in search of better standards of living standards in the country's major urban areas.

Population Demographic Map of Zimbabwe's six Provinces

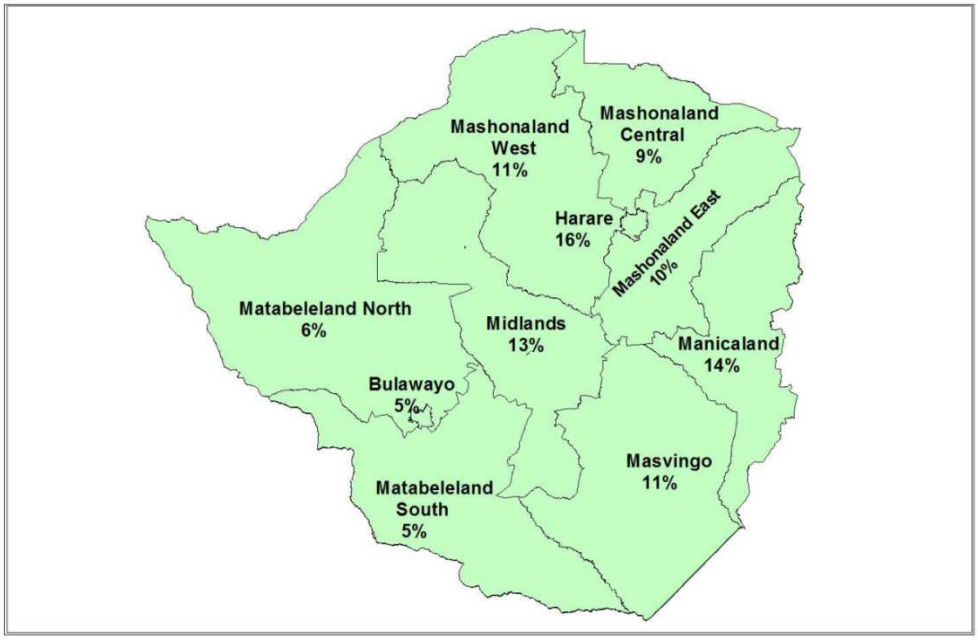

Figure 3. Source: Zimbabwe Population Distribution [ZIMSTATS (2012)]

Description of Study Variables

The following Table 1 outlines and describes each study variable, specifying what the variable/characteristic, type of variable, specifies which research question addressing each variable, and aligns each variable with the appropriate survey question measuring the attributes. All variables relate to measurable associations regarding PC screening and diagnosis in Zimbabwe as described in the data analysis plan.

Table 1: Variables Explained

Variable/Characteristic	**Type of Variable**	**Research Question(s) Addressing Variable**	**Question on Survey Investigating the Variable/Attribute**
Beliefs	Dependent	RQ1	PABQS Section 2 (All 19 items)
Attitudes	Dependent	RQ1	PABQS Quest1 (All 22 items)
Screening practices	Dichotomous	RQ2	PABQS Quest-4
Stage of cancer at diagnosis	Categorical	RQ2	PABQS Quest-13
Physician's gender	Dichotomous	RQ2	PABQS Quest-15
Training schools	Dichotomous	RQ2	PABQS Quest-17
Specialty	Categorical	RQ2	PABQS Quest-
Culture	Dichotomous	RQ2	PABQS Quest-19
Years of experience	Continuous data	RQ2	PABQS Quest-21
Training location	Dichotomous	RQ4	PABQS Quest- 38/39

Data Collection Instrument (PABQS)

The Physicians Attitudes and Beliefs Questionnaire Survey (PABQS) (Appendix A) was administered to a randomly selected group of current practicing physicians in Zimbabwe. The PABQS was developed from two survey instruments, the Burns' Cancer

Belief Scales (Frank-Stromborg, & Olsen, 2004) and the Physicians Cancer Belief Questionnaire (Volk, Linder, Kallen, Galliher, Spano, Mullen, & Span, 2013), modified, to measure physicians' attitudes and beliefs, practices of PC screening of Zimbabwean physicians, their diagnostic patterns, and how these attribute may affect patients' tendencies to hide or reveal symptoms of prostate cancer. Though it would been interesting to establish patients' perspective about PC attitudes and beliefs, the study did not include patients at this stage, though it is an area to be explored once physicians' attitudes and beliefs are established. It will be an interesting comparison to compare patient and contrast them to physician's attitudes and beliefs towards PC, considering the training effect physicians go through, as a desensitizing or sensitizing process.

Validity and Reliability of the Instrument

Validity and reliability of any instrument used in research determines accuracy of results. Considering that PABQS was developed from previously established instruments, the validity and reliability both were tested by the described pilot study below, though the used established instruments are considered comparatively high for a study of this nature. The instruments used to make up PASBS were not changed and the same scoring was used as used by the originators of the instrument to avoid altering validity. The pilot study revealed no inherent weaknesses and validated strength of the instrument designed by the researcher and the committee did not see any threats related to any nature of bias through the instrument itself.

Data Collection, Management, and Quality Control Procedure

Data used in this study was all primary data collected by the researcher and his assisting team using the PABQS instrument. The researcher used Survey Monkey's encrypted website to administer the questionnaire to the randomly chosen participants whose addresses were obtained from the Zimbabwe Medical Doctors Association and Zimbabwe Medical and Allied Professions. Instruments was also distributed through the local five provincial branches of the ZIMA in Harare, Masvingo, Gweru, Bulawayo, and Mutare using staff who knew where the physicians were located. A follow up survey was also done at the ZIMA annual congress meeting in Victoria Falls where participants were randomly chosen, in order to maximize response rate and participation. Researchers also visited the various institutions distributing questionnaires and collecting data throughout the country city by city. During the day, the team collected all the surveys and during the evenings they inputted data into Survey Monkey to build a data base through SPSS 22.0 software. All surveys were checked for completeness at two points, during the administration where data collectors would return the survey to the participant for completeness and during data entry when the second person would double check the entries. Once a survey was entered into SPSS 22.0 for Windows through Survey Monkey, questionnaires were tagged 'Data Entry Completed' and stored in a safe for statistical reference purposes.

Data Analysis Plan

Data was entered into SPSS 22.0 for Windows. Statistical analysis was conducted using SPSS 22.0. Means and standard deviations were conducted to present the

continuous variables of interest, such as beliefs toward prostate cancer screenings and attitudes toward prostate cancer screenings. Frequencies and percentages will be presented to describe the categorical variables of interest, to include specialty, screening practices, and physician's gender among others. SPSS software was utilized to build up a data base from which all data was analyzed.

Data Screening

Data was screened to be certain all participants met the inclusion criteria. Data was also assessed for accuracy, outliers, and missing cases. Descriptive statistics were conducted to assess accuracy. Z scores were created to assess outliers. Cases which were greater than 3.29 standard deviations from the mean were considered outliers and were removed from the dataset (Tabachnick & Fidell, 2012). Data was visually assessed for missing cases. Participants who skipped large portions of the survey were noted and kept until executive decisions were made at analysis, based on prevailing facts and outcomes, on whether, how to, include or exclude them, from the dataset. Large amounts of data were defined by failure to answer 95% of the responses in the questionnaire.

Cronbach's Alpha Coefficients

Cronbach's alpha coefficient was conducted to assess the internal consistency of beliefs toward prostate cancer screenings and attitudes toward prostate cancer screenings. Alpha coefficients will range from 0 - 1, where > .9 excellent, > .8 good, > .7 acceptable, > .6 questionable, > .5 poor, and < .5 unacceptable (George and Mallery, 2010).

Research Question 1 (RQ1): What are the current attitudes and beliefs of Zimbabwean physicians towards PC screening and diagnosis?

To assess research question 1 (RQ1), descriptive statistics will be presented. Beliefs will be calculated by averaging the participants' responses to the 22 items that make up the beliefs portion of the survey. Scores will range from 1 - 7. Higher scores will indicate more positive attitudes of prostate cancer. Means and standard deviations will be presented for physicians' beliefs toward prostate cancer screenings. Attitudes will be calculated by averaging the participants' responses to the 19 items that make up the attitudes portion of the survey. Scores will range from 1 - 5. Higher scores will indicate greater agreement with screening for prostate cancer. Means and standard deviations will be presented for physicians' attitudes toward prostate cancer screenings.

Research Question 2 (RQ2): Do screening practices, stage of prostate cancer diagnosis, physician's gender, training schools, specialty, culture, and years of experience predict physician's attitudes and beliefs?

$H1_0$: Screening practices, stage of prostate cancer diagnosis, physician's gender, training schools, specialty, culture, and years of experience do not predict physician's attitudes and beliefs.

$H1_a$: Screening practices, stage of prostate cancer diagnosis, physician's gender, training schools, specialty, culture, or years of experience predict physician's attitudes and beliefs.

To assess research question 2 (RQ2), and to determine if screening practices, stage of prostate cancer diagnosis, physician's gender, training schools, specialty, culture,

and years of experience predict physician's attitudes and beliefs, two multiple linear regressions will be conducted. The multiple linear regression is the appropriate analysis when the goal of research is to determine the extent of the relationship between a set of predictor variables and a continuous outcome variable (Pallant, 2010). The dependent variables will be physician's attitudes and physician's beliefs. One regression will be conducted for each dependent variable. Physician's attitudes will be measured by averaging the participants' responses to the 19 items that make up the attitudes portion of the survey. Physician's beliefs will be calculated by averaging the participants' responses to the 22 items that make up the beliefs portion of the survey. Physicians' attitudes and beliefs will be treated as continuous data. The predictor variables in each analysis will be screening practices, stage of prostate cancer diagnosis, physician's gender, training schools, specialty, culture, and years of experience. Screening practices will be treated as a dichotomous variable and measured with survey question four, which asks, "Do you prompt your patients to have prostate cancer screening examination?" Response options will include yes and no. Stage of diagnosis of prostate cancer will be a categorical variable that will be dummy coded for use in the analysis (0 = non-inclusion and 1 = inclusion). One variable will be created for each stage of prostate cancer, and will indicate whether or not a majority of participants' patients were diagnosed for each stage. It will be measured with survey item 13 which asks, "At what stage are the majority of your patients when they are first diagnosed with prostate cancer?" Response options will include stages 1 - 4. Physician's gender will be measured with survey question 15 and will be treated as a dichotomous variable. Response options will include

male and female. Training schools will be treated as a dichotomous variable. It will be measured with survey item 17 which asks, "Did you train in Zimbabwe?" Response options will include yes vs. no. Specialty will be treated as a categorical variable and will be dummy coded for analysis. Response options include gender, medical practitioner, urologist, oncologist, and resident. Culture will be treated as a dichotomous variable and measured with survey item 19 which asks, "Does your cultural background interfere with prostate cancer screening guidelines?" Response options will include yes and no. Years of experience will be treated as continuous data. It will be measured with survey question 21 which asks, "Total years in practice?"

Standard multiple regression will be used. All predictor variables will be entered into the model at the same time. The *F* test will be used to assess the overall model. R^2 will be used to determine the amount of variance in attitudes and beliefs that can be attributed to the set or predictor variables (Tabachnick & Fidell, 2012). The *t* test will be used to determine the significance of the individual predictor variables. For the significant predictors, every one unit increase in the predictor will result in and increase or decrease in the dependent variable by the number of unstandardized beta units. An alpha of .05 will be used to assess the regression analysis.

Assumptions: Prior to analysis the assumptions of linearity, homoscedasticity, and absence of multicollinearity will be assessed. Linearity assumes the predictor variables are linearly related to the dependent variable. Homoscedasticity assumes that scores are normally distributed about the regression line. Both assumptions will be assessed with the examination of scatterplots. Absence of multicollinearity assumes the predictor

variables are not too related. Variance inflation factors (VIF values) will be presented to be certain the assumption is met. If the VIF values are below 10.0 the assumption has not been violated (Stevens, 2009).

Research Question 3 (RQ3): Are there statistically significant differences in attitudes and beliefs of prostate screening for physicians in Zimbabwe by where they were trained (locally vs. foreign)?

$H2_0$: There are not statistically significant differences in attitudes and beliefs of prostate screening for physicians in Zimbabwe by where they were trained (locally vs. foreign).

$H2_a$: There are statistically significant differences in attitudes and beliefs of prostate screening for physicians in Zimbabwe by where they were trained (locally vs. foreign).

To assess research question 3 (RQ3), and to determine if there are statistically significant differences in attitudes and beliefs of prostate screening for physicians in Zimbabwe by where they were trained (locally vs. foreign), a between measures multivariate analysis of variance (MANOVA) will be conducted. The MANOVA is the appropriate statistical analysis when the goal of research is to determine if there are significant differences on two or more continuous dependent variables by two or more groups. The dependent variables in the analysis will be physician's attitudes and physician's beliefs. Both variables will be treated as continuous variables and will be measured as indicated previously. The independent variable in the analysis will be the grouping variable. The grouping variable will be training location for physicians in

Zimbabwe (locally vs. foreign). It will be treated as a dichotomous variable. An alpha of .05 will be used. Individual ANOVAs will be examined only if the MANOVAs are found to be significant.

Assumptions: Prior to analysis the assumptions of the MANOVA will be assessed. Those assumptions include normality, homogeneity of variance/covariance, and absence of multicollinearity. Normality assumes the data is normally distributed and will be assessed with Kolmogorov Smirnov tests (Cramer, 1998). Homogeneity of variance assumes both groups have equal error variances and will be assessed with Levene's tests (Leech, Barrett, & Morgan, 2008). Homogeneity of covariance is the multivariate equivalent of homogeneity of variance and will be assessed with Box's M. Absence of multicollinearity will be assessed with a Pearson product moment correlation. If the correlation is < .90, the assumption is met (Tabachnick & Fidell, 2012).

Research Question 4 (RQ4): Are there statistically significant differences in the proportion of physicians following professionally established guidelines by where they were trained (locally vs. foreign)?

$H3_0$: There are not statistically significant differences in the proportion of physicians following professionally established guidelines by where they were trained (locally vs. foreign).

$H3_a$: There are statistically significant differences in the proportion of physicians following professionally established guidelines by where they were trained (locally vs. foreign).

To assess research question 4 (RQ 4), and to determine if there are statistically significant differences in the proportion of physicians following professionally established guidelines by where they were trained (locally vs. foreign), a *z* test of two proportions will be conducted. The *z* test of two proportions is the appropriate statistical analysis when the goal of research is to determine if there are differences in the proportions of two populations. One population will be those physicians who were locally trained and the other will be those who were foreign trained.

Sample Size

G*Power was used to calculate the appropriate sample size. The proposed data analysis plan will require MANOVAs and multiple regressions to be conducted. The multiple linear regression required the most stringent sample size. For a multiple linear regression with seven predictors, using a medium effect size ($f^2 = .15$), an alpha of .05, and a power of .80, the required minimum sample size to achieve empirical validity was calculated to be 103 participants (n =103). This sample size should be achievable in an estimated population size of the approximated 800 registered and practicing currently in Zimbabwe.

Pilot Study Results

Introduction

In order to test the validity and reliability of the PABQS instrument, a pilot study was done through Survey Monkey and the following results were obtained. Response of pilot survey was 70% with seven responses out of the ten questionnaires send out electronically. All 42 items were tested for correlation and the instrument produced a Cronbach alpha of .93, suggesting an excellent reliability of the PABQS instrument using the guidelines suggested by George and Mallery (2010). This was an indication of the appropriateness of the questionnaire shown by the response time demonstrating the interest of the targeted population for all responses were within a week.

Results

Seven individuals participated in the pilot study; frequencies and percentages for participants follow. Four of the participants were male (57.1%), and three were females. Most of the participants identified as Black (6, 85.7%), with the last participant identifying as Asian. Six of the participants were trained in Zimbabwe (85.7%). Two (28.6%) participants were 25 to 34 and two were 55 to 64 years old. The age groups of 35 to 44, 45 to 54, and over 65 years old had one (14.3%) participant each.

Most of the participants (6, 85.7%) were comfortable performing digital rectal examinations with patients, while more than half (4, 57.1%) said their patients were not comfortable with digital rectal examinations. A majority of participants (4, 57.1%) stated a majority of their patients were in Stage 2 when they were first diagnosed with cancer. Five (71%) of the participants thought cultural background interferes with prostate cancer

screening guidelines. Most of the participants (5, 83%) follow established guidelines for prostate screening and diagnosis.

A majority of participants (4, 67%) were General Medical Practitioners. The most frequent response for total years in practice was 31 to 35 years (2, 28.57%). Frequencies and percentages for nominal variables are presented in Table 1a as presented below.

Table 1a

Pilot Study Frequencies and Percentages for Nominal Variables

Variables	*n*	%
Personal Comfort		
No	1	14
Yes	6	86
Patient Comfort		
No	4	57
Yes	3	43
Stage		
Stage 2	4	57
Stage 3	2	29
Stage 4	1	14
Age		
25 to 34	2	29
35 to 44	1	14
45 to 54	1	14
55 to 64	2	29
>65	1	14
Gender		
Female	3	43
Male	4	57
Ethnicity		
Asian	1	14
Black	6	86
Trained In Zimbabwe		
No	1	14
Yes	6	86

Culture		
No	5	71
Yes	2	29
Total Years in Practice		
1-5	1	14.3
16-20	1	14.3
21-25	1	14.3
31-35	2	28.6
>36	1	14.3
6-10	1	14.3
Follow Guidelines		
No	1	17
Yes	5	83
Specialty		
General Medical	4	67
Other Specialty	2	33

Note. Due to rounding error, percentages may not add up to 100.

For Attitude, observations ranged from 2.61 to 3.44, with an average observation of 2.94 (*SD* = 0.32). For Beliefs, observations ranged from 56.00 to 140.00, with an average observation of 88.71 (*SD* = 32.78). Means and standard deviations for the variables are presented in Table 5a.

Table 5a

Pilot Study Means and Standard Deviations for Attitude and Beliefs

Variable	*Min.*	*Max.*	*M*	*SD*
Attitude	2.61	3.44	2.94	0.32
Beliefs	56.00	140.00	88.71	32.78

Reliability and Validity

A Cronbach's test of Reliability was conducted to assess the internal consistency of the PABQS. Also known as the coefficient alpha, the Cronbach's alpha provides the mean correlation between each pair of items and the number of items in a scale (Brace,

Kemp & Snelgar, 2006). All 42 items were tested for correlation and the instrument produced a Cronbach alpha of .93. This suggest an excellent reliability using the guidelines suggested by George and Mallery (2010) where > .9 Excellent, > .8 Good, > .7 Acceptable, > .6 Questionable, > .5 Poor, < .5 Unacceptable.

Research Question 2

For Research Question 2, a multiple linear regression with all predictor variables was not viable due to the small sample. This caused some variables to be constants or have no correlation with the dependent variables.

Research Questions 3

A MANOVA was conducted to assess the significance of differences, if any, in physician's attitudes and beliefs by where they were trained. The results of the test were not significant (p = .43), suggesting that there were no differences in physician's attitudes and beliefs by where they were trained. Since the MANOVA was not significant, individual ANOVAs were not calculated.

Research Question 4

Due to the small sample size, a two proportion z test was not recommended, due to the violation of the assumptions. An independent sample t-test was ran in its place, with results showing no significance in differences in following guidelines based on where physicians received their training.

Pilot Study Results Conclusion

Using the results of the pilot study, the validity and reliability of the instrument was validated and the researcher found it appropriate to generalize the study findings to

the general physician population in the Zimbabwe. Hence the instrument was used in its entirety.

Chapter 4: Results

Introduction

The current cross sectional quantitative study was conducted in Zimbabwe to establish physicians' attitudes and beliefs regarding PC (prostate cancer) screening and diagnosis. The researcher conducted data collection in the field using the Physician Attitudes and Beliefs Questionnaire Survey (PABQS). Data were collected by surveying physicians who were registered and actively practicing medicine in Zimbabwe through private clinics, group private practice, FBO (faith based organization) hospitals, private company owned health care centers, and government health care facilities in the country. The target population consisted of approximately 800 registered and practicing physicians in the country.

The preliminary data management procedures will be detailed in this chapter. Descriptive statistics will be reported followed by the results of the reliability analysis. A summary of the results will be included to provide a synopsis of results of the data analysis. Further detailed reporting of the results will be presented followed by a conclusion.

Preliminary Data Management

Survey response data were entered into SPSS 22.0 for data analysis. A total of 208 participants completed the survey (n=208). Prior to analysis, the data were examined for missing cases and the presence of outliers. Response from participants with significant amounts of missing survey responses (i.e. failure to answer at least 95% of the survey items) were to be kept until statistical decisions were made at analysis, based on

prevailing facts and outcomes and acceptable preservation or loss of power regarding the analysis, on whether to include or exclude them from the dataset. Significant amounts of missing data for this purpose was defined by failure to answer at least 95% of the responses in the questionnaire. There were no missing cases or missing responses in the data. Outliers (i.e., extreme scores) were assessed using standardized values, or *z* scores. Standardized values were calculated for each subscale score (i.e., servant leadership and organizational learning). Scores with standardized values greater than 3.29 or less than -3.29 were considered outliers (Tabachnick & Fidell, 2012). Two outliers were found and removed for the overall attitude scale. A total of 206 respondents were retained in the final dataset (n = 206).

Descriptive Statistics

Frequencies and Percentages

Although ages varied from 25 to over 65, many participants were 25-34 years of age (84, 42%). The majority of participants were male (157, 79%). The most frequent responses indicated for total years in practice were 1-5 (53, 27%) and 6-10 (53, 27%). Frequencies and percentages for nominal variables are presented in Table 2. Because six participants did not provide data for age, gender, and total years in practice the sample size (*n*) for these categories do not equal 206.

Table 2.

Frequencies and Percentages for Age, Gender, and Total Years in Practice

Variables	*n*	%
Age		
25 to 34	84	42
35 to 44	44	22
45 to 54	44	22
55 to 64	22	11
Over 65	6	3
Gender		
Female	43	22
Male	157	79
Total Years in Practice		
1-5	53	27
6-10	53	27
11-15	28	14
16-20	20	10
21-25	13	7
24-30	16	8
31-35	12	6
Over 36	5	3

Note. Due to rounding error, percentages may not add up to 100. Due to missing responses the values may not total to 206.

Means and Standard Deviations

An item by item analysis was conducted to assess the means and standard deviations for the individual items that comprise the beliefs scale and the instruments scale. For the belief scale, all item responses ranged from 1 to 7. For the attitude scale, all item responses ranged from 1 to 5. Means and standard deviations for the individual items from the beliefs and attitudes scales are presented in Table 3.

Table 3.

Means and Standard Deviations for the Individual Items from the Beliefs and Attitudes Scales

Dependent Variable	*M*	*SD*
Belief 1	4.16	1.72
Belief 2	4.01	1.60
Belief 3	4.23	1.62
Belief 4	3.78	1.48
Belief 5	5.71	1.58
Belief 6	4.34	1.80
Belief 7	3.76	1.70
Belief 8	5.02	1.70
Belief 9	4.50	1.73
Belief 10	4.10	1.47
Belief 11	3.79	1.67
Belief 12	3.28	1.48
Belief 13	3.23	1.65
Belief 14	2.99	1.53
Belief 15	4.31	1.78
Belief 16	4.45	1.69
Belief 17	3.20	1.56
Belief 18	4.40	1.63
Belief 19	4.82	1.66
Belief 20	3.06	1.60
Belief 21	3.15	1.93
Belief 22	2.92	1.69
Attitude 1	4.33	1.10
Attitude 2	2.36	1.25
Attitude 3	1.92	1.07
Attitude 4	4.29	1.19
Attitude 5	3.18	1.39
Attitude 6	3.42	1.14
Attitude 7	2.88	1.37
Attitude 8	3.11	1.19
Attitude 9	3.11	1.28

Attitude 10	2.09	1.19
Attitude 11	2.52	1.35
Attitude 12	1.78	1.07
Attitude 13	2.59	1.28
Attitude 14	3.57	1.23
Attitude 15	2.37	1.16
Attitude 16	2.40	1.07
Attitude 17	2.78	1.31
Attitude 18	3.85	1.06
Attitude 19	3.08	1.21

For the majority of items on the belief scales, responses were mostly neutral (i.e. 1-4, 6, 7, 9-12, 15, 16, 18, and 19).

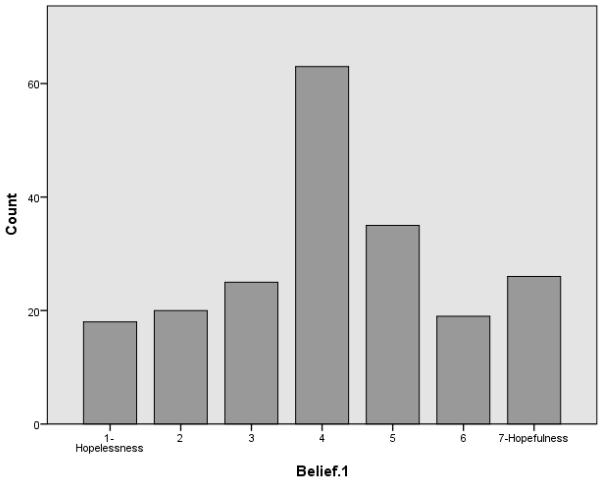

Figure 4. Belief item 1.

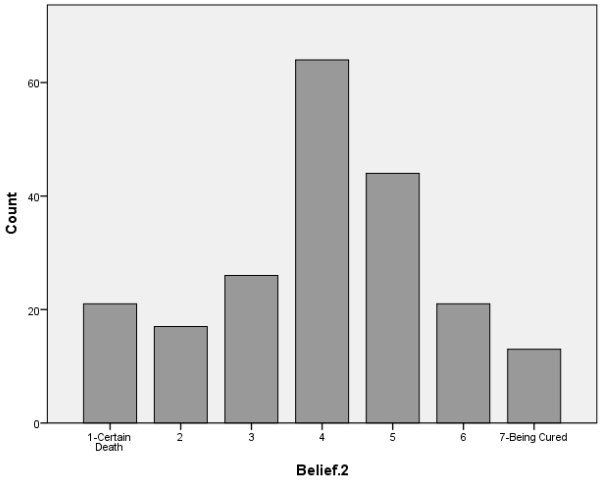

Figure 5. Belief item 2.

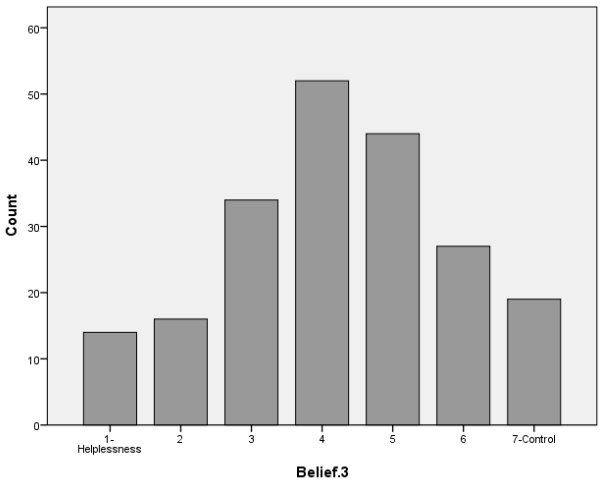

Figure 6. Belief item 3.

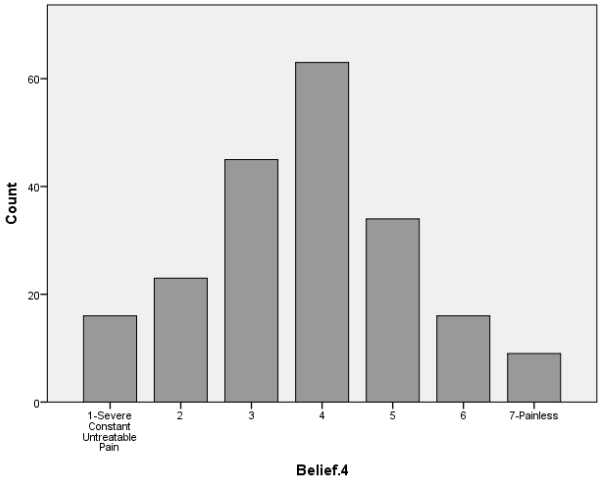

Figure 7. Belief item 4.

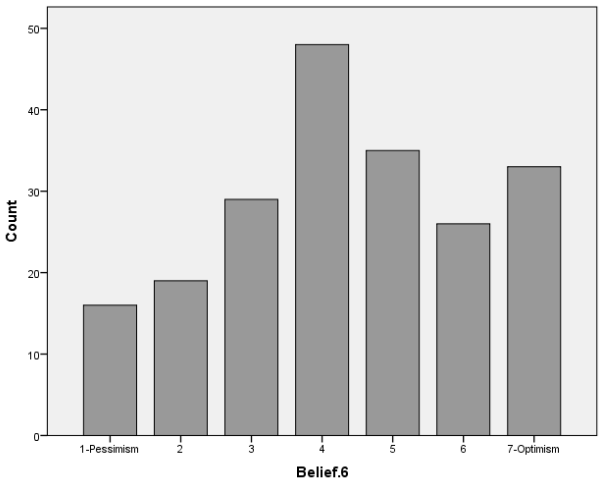

Figure 8. Belief item 6.

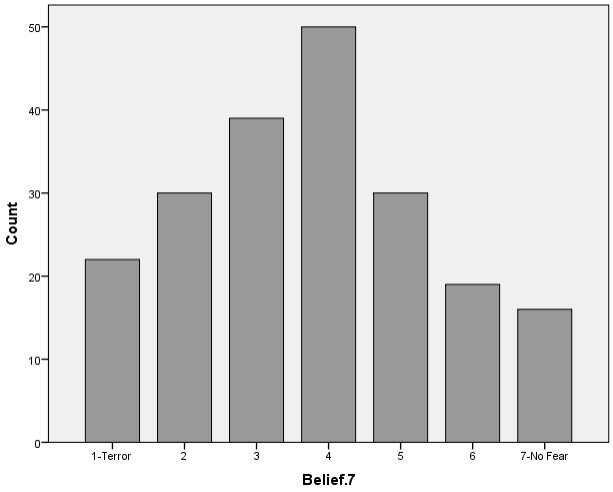

Figure 9. Belief item 7.

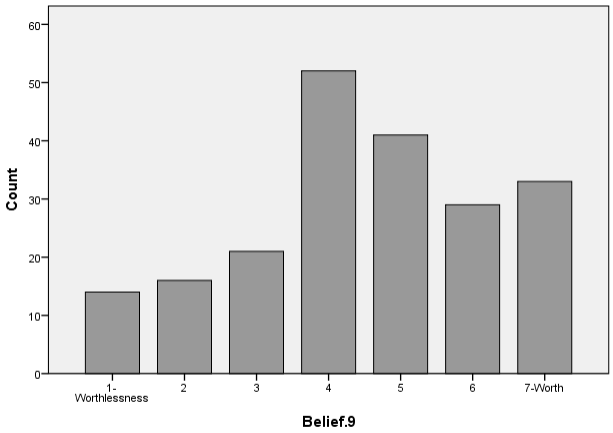

Figure 10. Belief item 9.

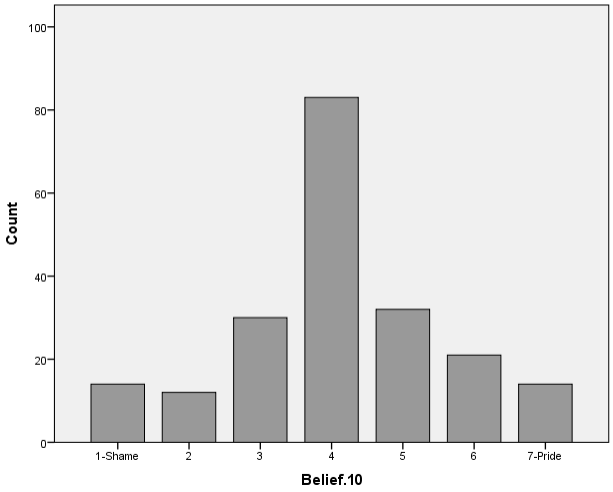

Figure 11. Belief item 10.

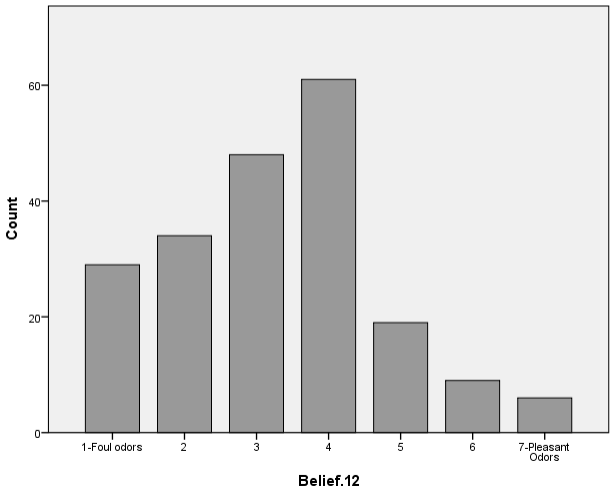

Figure 12. Belief item 12.

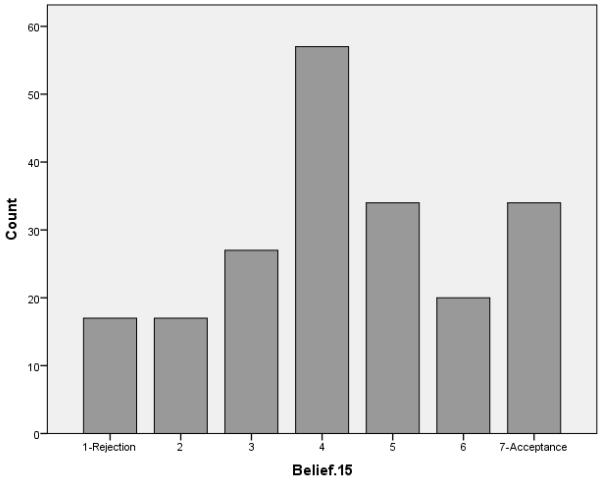

Figure 13. Belief item 15.

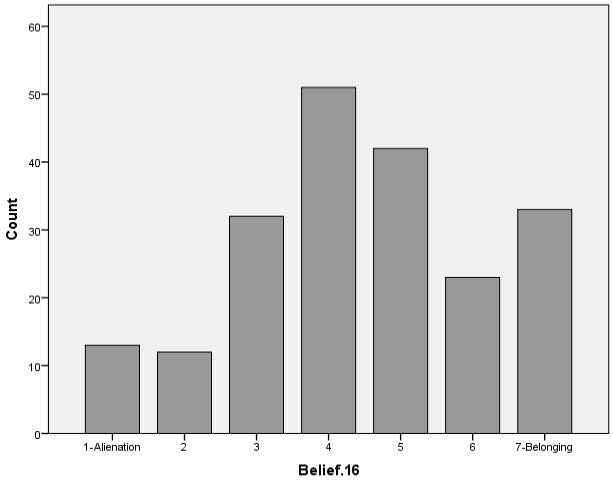

Figure 14. Belief item 16.

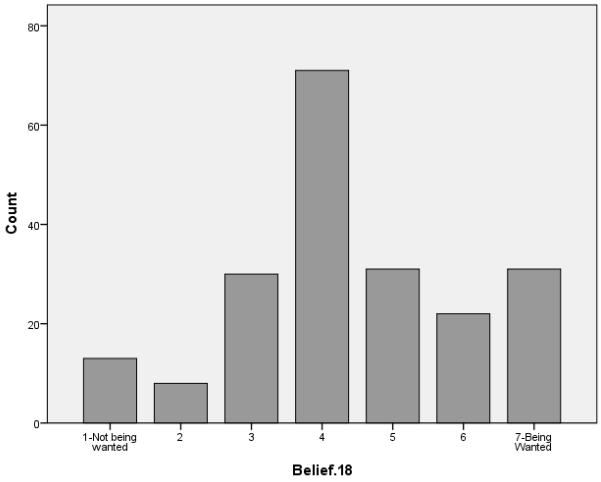

Figure 15. Belief item 18.

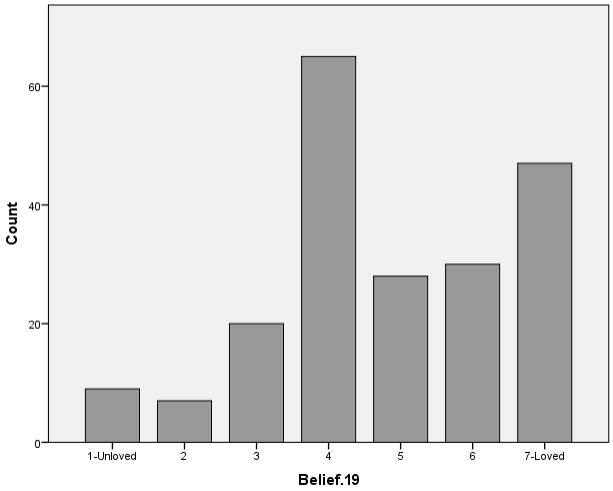

Figure 16. Belief item 19.

Within these, some individual items, although mainly neutral, had responses clustered either on the lower or higher end of the scale. Responses for items 4, 7, and 11 were on the low end of the response scale while those for items 2, 3, 9, 15, 17, and 19 were on the high end of the response scale. Responses were evenly spread across the low and high end of the response scale for items 1 and 10.

For item 5, the majority of respondents reported a 4 or 7 on the response scale.

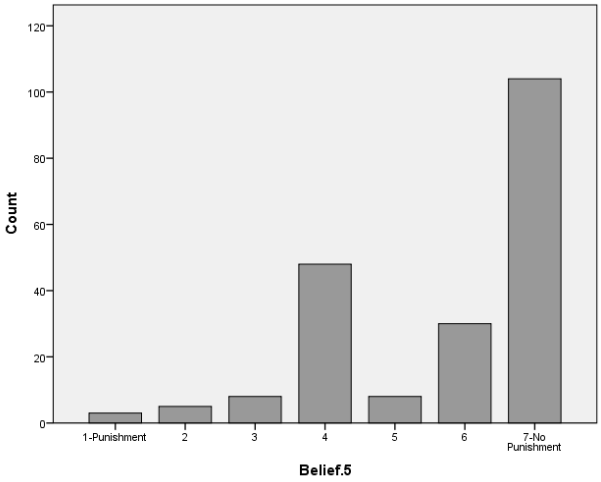

Figure 17. Belief item 5.

For item 8, the majority of participants indicated a 4, 6, or 7 on the response scale.

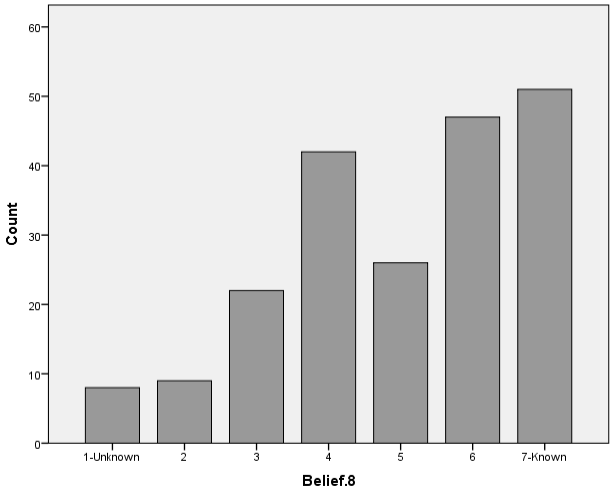

Figure 18. Belief item 8.

In item 13, response options 1-4 were most frequently reported; responses were similarly distributed for items 14 and 20.

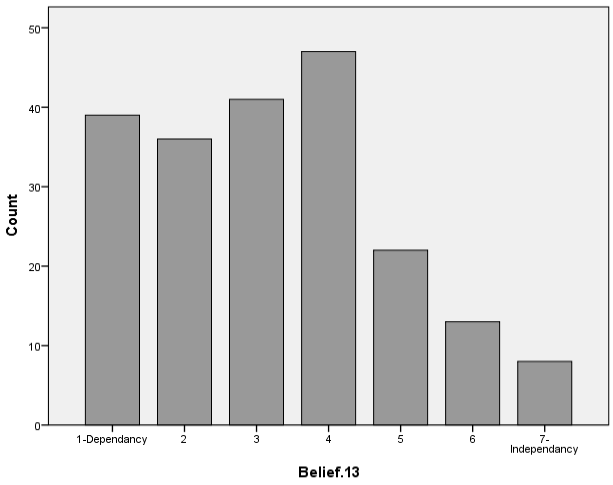

Figure 19. Belief item 13.

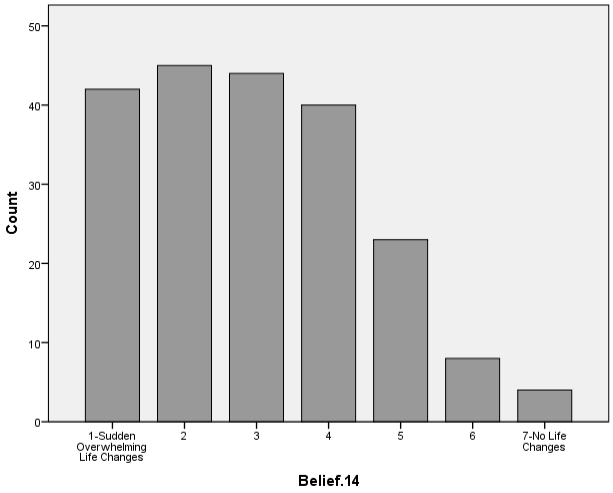

Figure 20. Belief item 14.

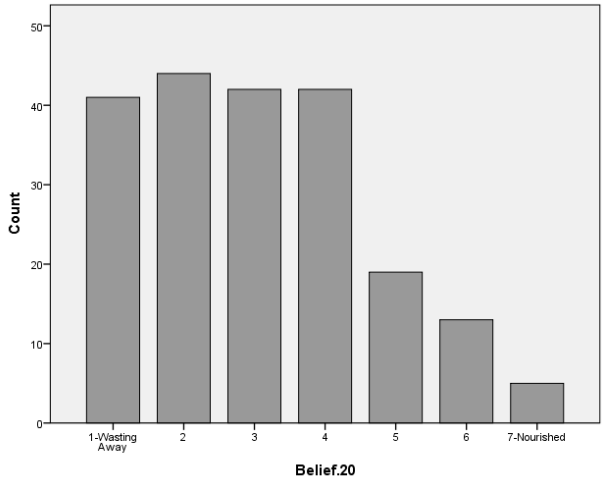

Figure 21. Belief item 20.

Participants mainly responded with a 3 or 4 on item 17.

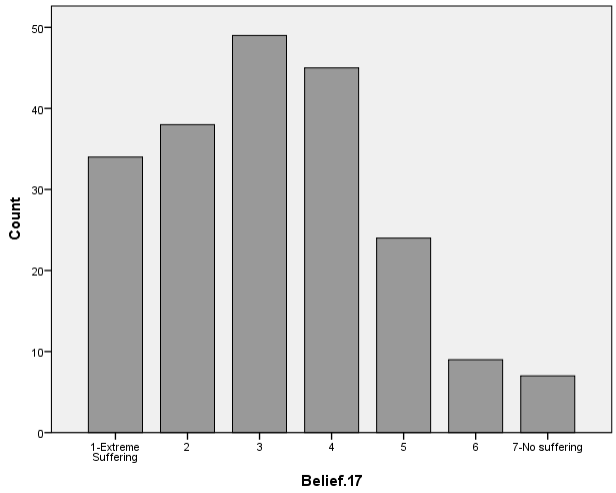

Figure 22. Belief item 17.

The most frequent response for items 21 and 22 was 1.

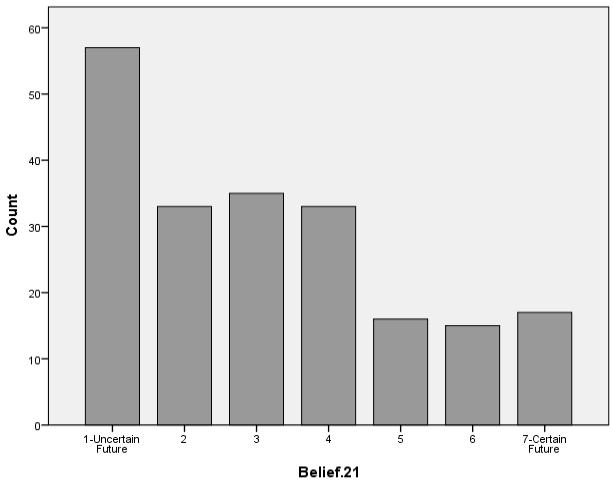

Figure 23. Belief item 21.

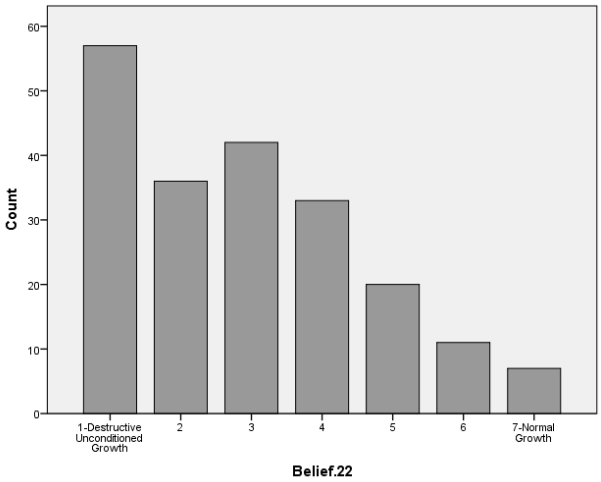

Figure 24. Belief item 22.

On the attitude scale, participants tended to strongly disagree or disagree on items 2, 3, 10, 12, and 13.

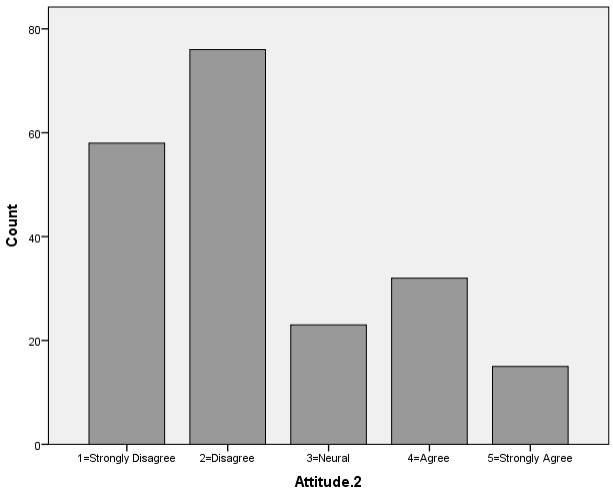

Figure 25. Attitude item 2.

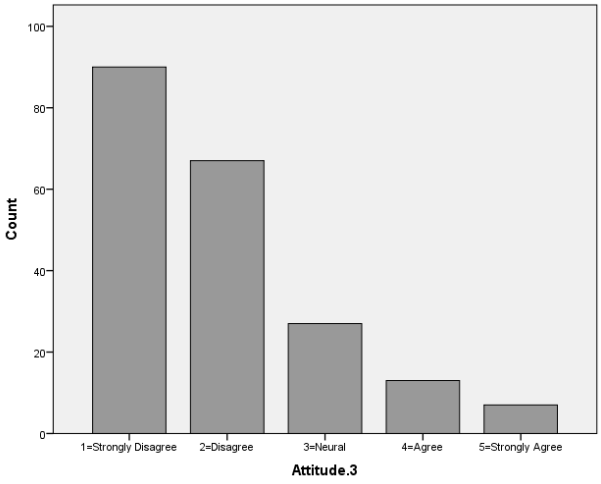

Figure 26. Attitude item 3.

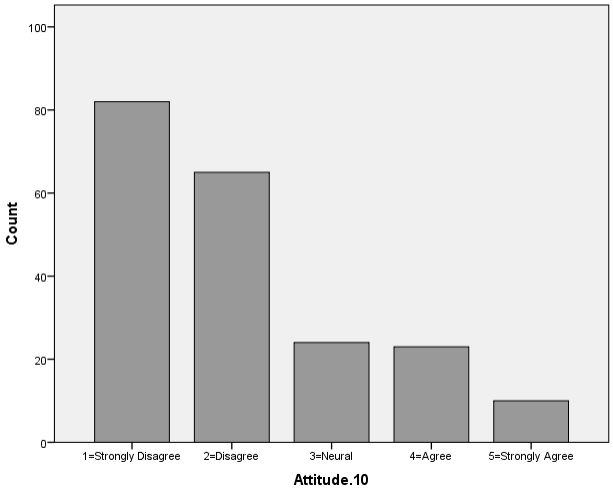

Figure 27. Attitude item 10.

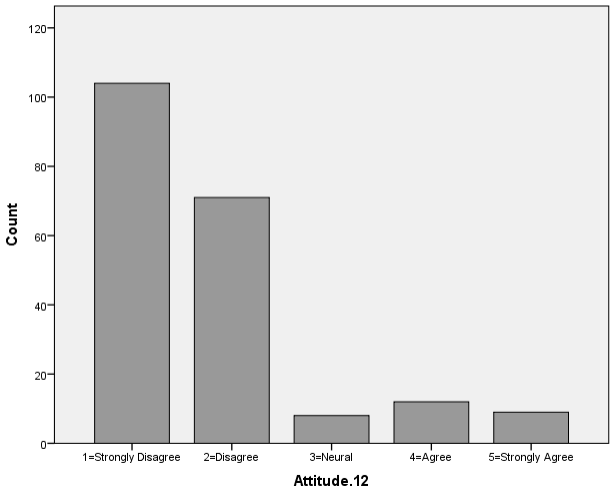

Figure 28. Attitude item 12.

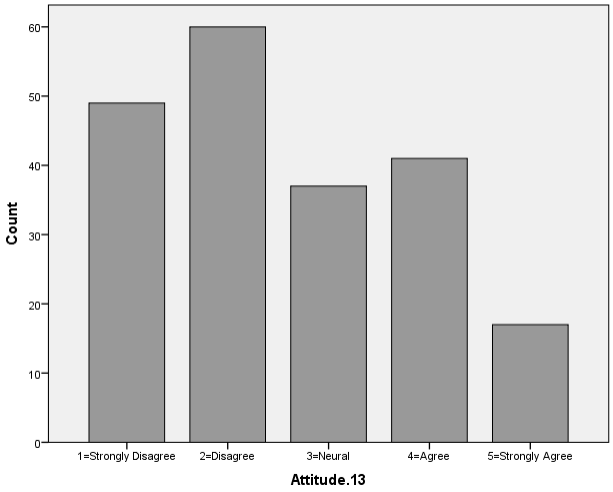

Figure 29. Attitude item 13.

Responses were mostly evenly spread across options 1-4 on items 5 and 7.

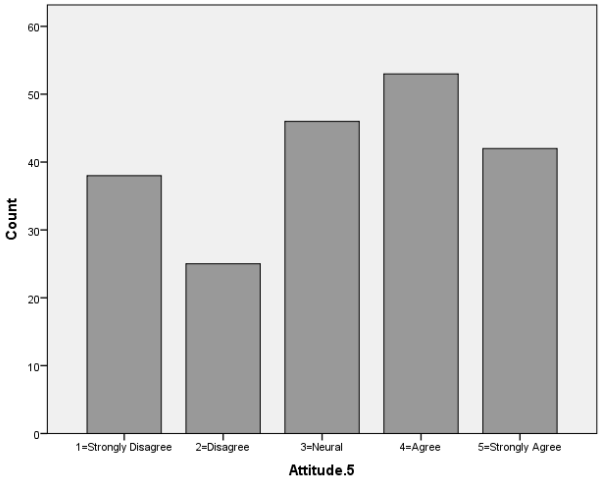

Figure 30. Attitude item 5.

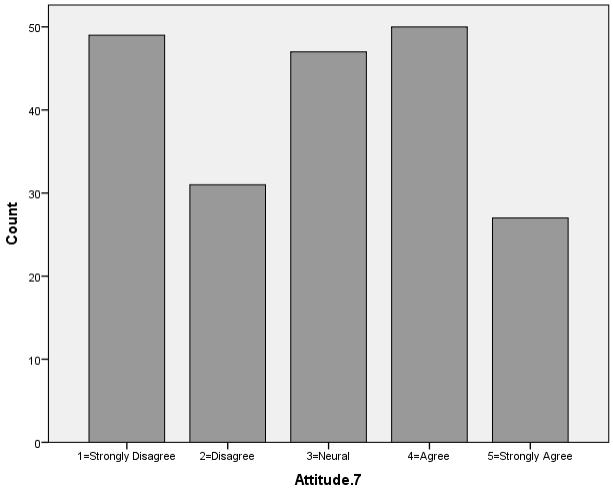

Figure 31. Attitude item 7.

Participants tended to disagree on items 15 and 17.

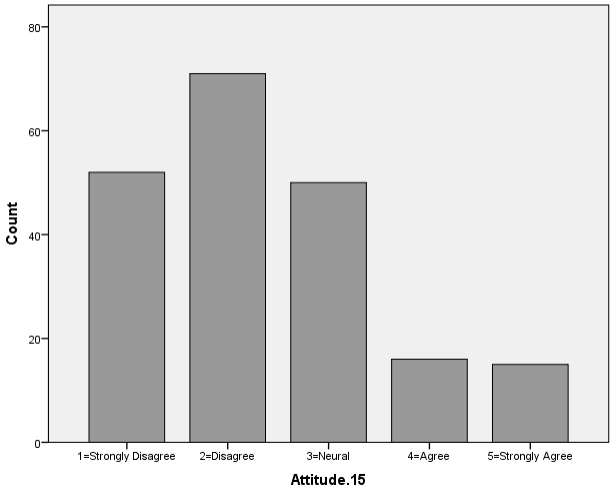

Figure 32. Attitude item 15.

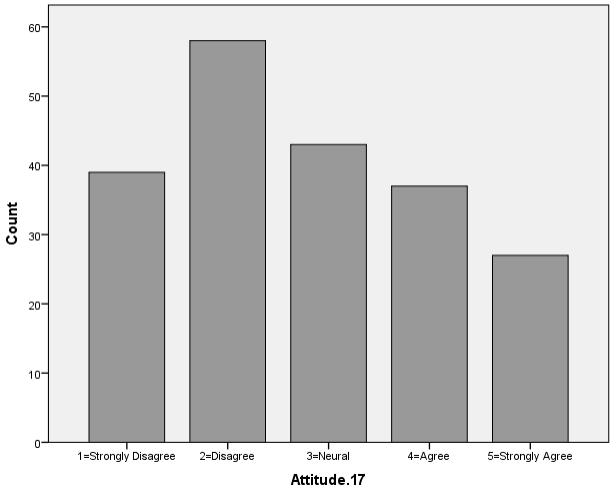

Figure 33. Attitude item 17.

Respondents disagreed or were neutral on item 16, while they ranged from disagreement to agreement on items 8 and 9.

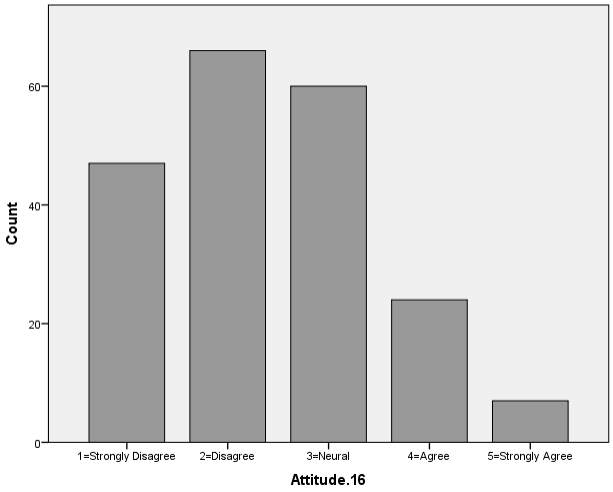

Figure 34. Attitude item 16.

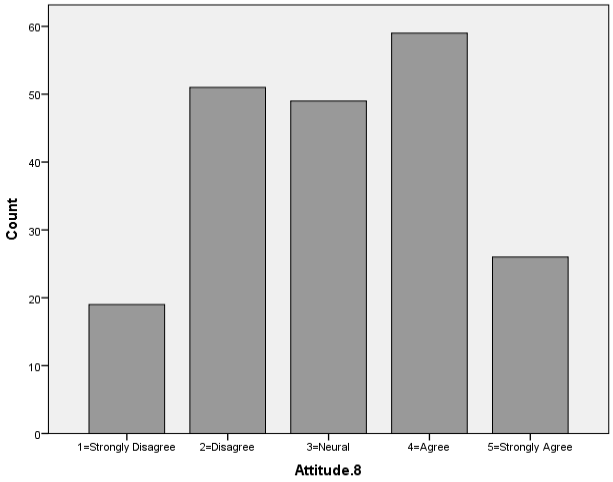

Figure 35. Attitude item 8.

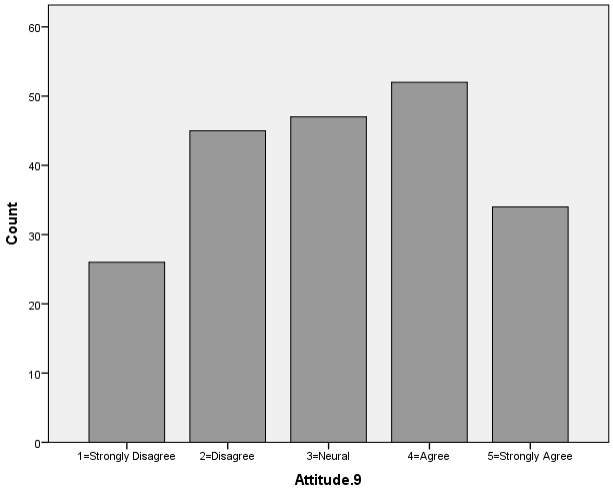

Figure 36. Attitude item 9.

For items 6 and 19, participant responses ranged from neutrality to agreement, while responses ranged from neutrality to strong agreement on item 14.

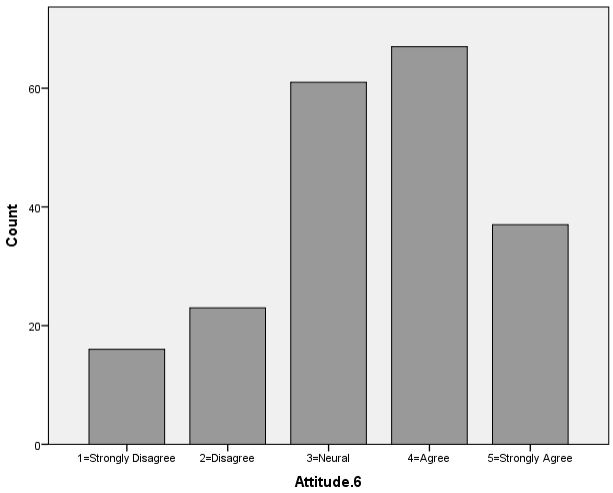

Figure 37. Attitude item 6.

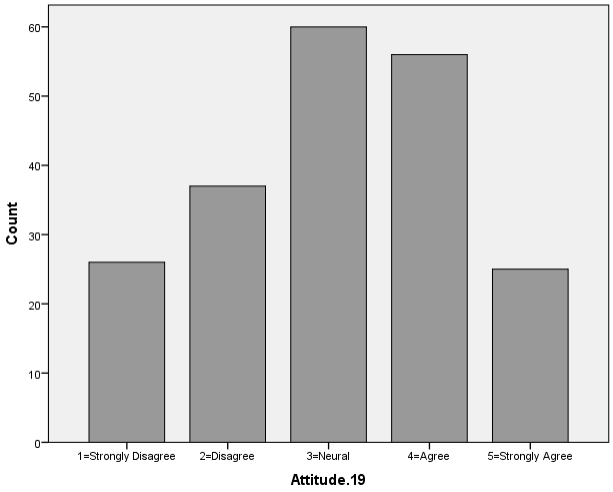

Figure 38. Attitude item 19.

Participants mainly indicated agreement and strong agreement on items 4 and 18.

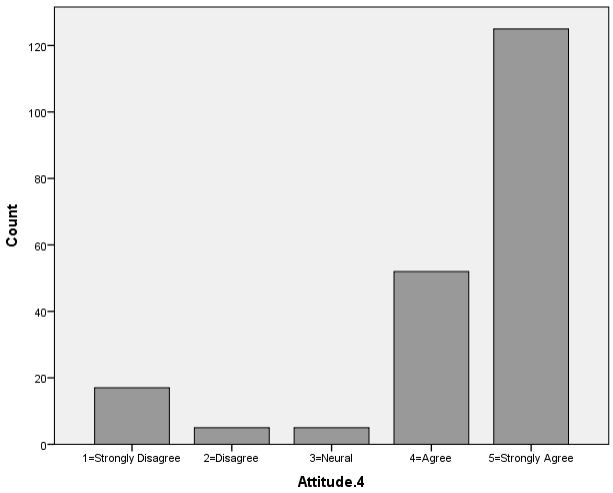

Figure 39. Attitude item 4.

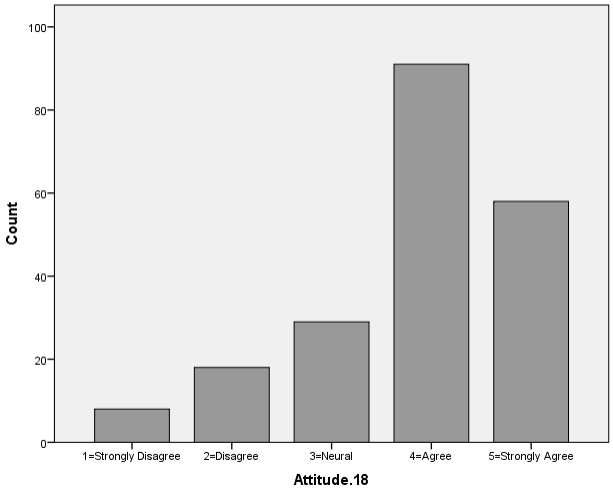

Figure 40. Attitude item 18.

Respondents were mainly in strong agreement on items 1 and 11.

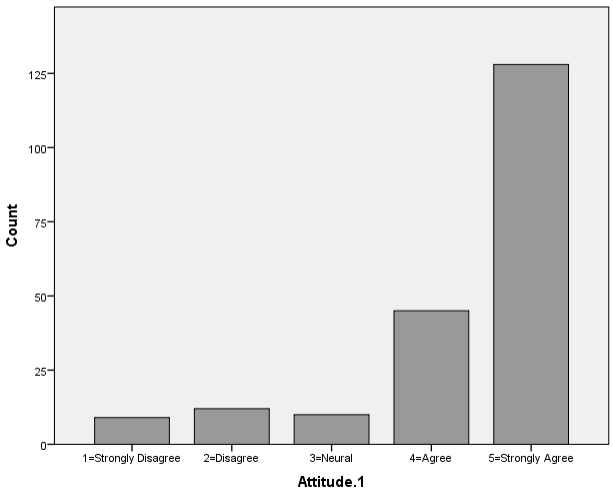

Figure 41. Attitude item 1.

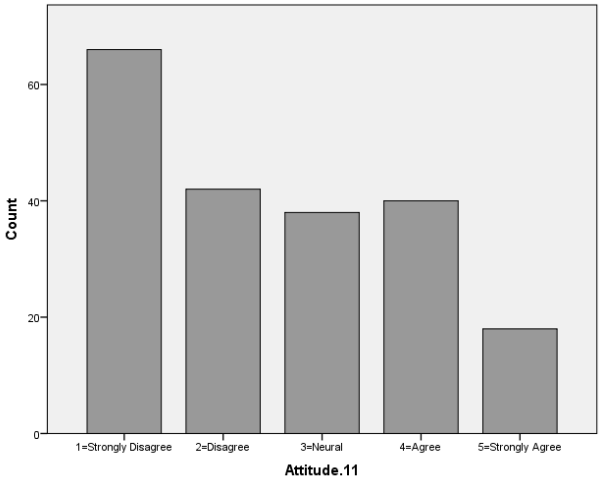

Figure 42. Attitude item 11.

Reliability Analysis

Inter-item reliability was assessed on both composite scores using Cronbach's alpha. Cronbach's alpha is used to calculate the mean correlation between the items in the scale. George and Mallery (2010) suggest the following guidelines for evaluating Cronbach's alpha: > .9 Excellent, > .8 Good, > .7 Acceptable, > .6 Questionable, > .5 Poor, < .5 Unacceptable. The reliability of the belief scale was excellent (α = .93). The reliability of the attitude scale was questionable (α = .67). Reliability coefficients for the scales are presented in Table 4.

Table 4.

Reliability Coefficients for the Beliefs and Attitudes Scales

Dependent Variable	Number of Items	α	*M*
Belief Score	22	.929	3.96
Attitude Score	19	.670	2.93

Summary of Results

Analyses were conducted to assess the research questions outlined below. For research question 1, descriptive statistics were conducted to report the attitudes and beliefs of the physicians in the sample. Means for the scale scores reflected that the participants were neutral in their beliefs and attitudes regarding prostate cancer. For research question 2, multiple regressions were conducted to assess if screening, stage of cancer, physicians' gender, training location, total years in practice, and specialty predicted beliefs and attitudes. The results of the regression were significant for belief score, $F(19, 178) = 2.09$, $p = 0.007$, $R^2 = 0.18$, and attitude score, $F(19,179) = 3.23$, $p =$

.001, $R^2 = 0.26$. Total years of practice were significant for belief score; screening and training were significant individual predictors for attitude score. The results of the MANOVA were significant for the overall MANOVA indicating there were statistically significant differences in belief and attitude score by training location, $F(2, 196) = 5.42$, $p = .005$. The results were not significant for belief score, however the results were significant attitude. For research question 3, a *z* test of two proportions was conducted. Results indicate that there are no statistically significant differences in the number of doctors who adhere to professionally established guidelines by training (locally vs. foreign).

Detailed Results of Analysis

RQ1: What are the current attitudes and beliefs of Zimbabwean physicians towards PC screening and diagnosis?

The Belief instrument response options ranged from 1-7. Higher scores on the items indicate more positive beliefs regarding prostate cancer, e.g. hopelessness to hopefulness, and helplessness to control. Belief score observations ranged from 1.36 to 6.68. The average Belief score was 3.96 (*SD* = 1.04). This mean reflects an overall belief score falling in the neutral range of response options.

The Attitude instrument response options ranged from 1-5. A response of 1 indicated a strong disagreement, while a response of 5 indicated strong agreement. Attitude score observations ranged from 1.79 to 4.16. The average Attitude score was 2.93 (*SD* = 0.43). This mean reflects that the overall attitude score for the sample was

neutral. Means and standard deviations for continuous variables are presented in Table 5b.

Table 5b.

Means and Standard Deviations for Continuous Variables

Dependent Variable	*M*	*SD*
Belief score	3.96	1.04
Attitude score	2.93	0.43

RQ2: Do screening practices, stage of prostate cancer diagnosis, physician's gender, training schools, specialty, culture, and years of experience predict physician's attitudes and beliefs?

$H2_0$: Screening practices, stage of prostate cancer diagnosis, physician's gender, training schools, specialty, culture, and years of experience do not predict physician's attitudes and beliefs.

$H2_a$: Screening practices, stage of prostate cancer diagnosis, physician's gender, training schools, specialty, culture, or years of experience predict physician's attitudes and beliefs.

To examine the research question, a multiple linear regression was conducted to assess if Screening, Stage of Cancer, Gender, Training Location, Culture, Total Years in Practice, and Specialty predicted Belief score. Prior to analysis, the assumption of normality was assessed with a Q-Q scatterplot (see Figure 43). The assumption was met because the points do not deviate strongly from the normality line. The assumption of homoscedasticity was assessed with a residuals scatterplot (see Figure 44). The

assumption was met because the points are rectangularly distributed and the curvature line is approximately straight.

The results of the linear regression were significant, $F(19, 178) = 2.09$, $p = 0.007$, $R^2 = 0.18$, suggesting that Screening, Stage of Cancer, Gender, Training Location, Culture, Total Years in Practice, and Specialty accounted for 18% of the variance in Belief score. The individual predictors were examined further. Screening was not a significant predictor of Belief score, $B = -0.04$, $p = 0.797$. Stage of Cancer was not a significant predictor of Belief score, $B = 0.1$, p = 0.708. Gender was not a significant predictor of Belief score, $B = -0.33$, p = 0.198. Training Location was not a significant predictor of Belief score, $B = -0.44$, p = 0.102. Culture was not a significant predictor of Belief score, $B = 0.26$, $p = 0.158$. Total Years in Practice was a significant predictor of Belief score; specifically, for 16-20 years, $B = 1.05$, p = .001, and 24-30 years $B = 0.96$, p = 0.003. Specialty was not a significant predictor of Belief score, $B = -0.04$, p = 0.842. Results of the multiple linear regression are presented in Table 6.

Table 6.

Statistics for Multiple Regression of Belief predicted by Screening, Stage of Cancer, Gender, Training Location, Culture, Total Years in Practice, and Specialty among Physicians in Zimbabwe

Predictor Variable	*B*	*SE*	*t*	*p*
Screening: Yes (ref: No)	0.04	0.17	-0.26	.797
PC Stage 2 (ref: Stage 1)	0.10	0.27	0.38	.708
PC Stage 3 (ref: Stage 1)	0.33	0.26	1.29	.198

PC Stage 4 (ref: Stage 1)	0.44	0.27	1.65	.102
Gender: Male (ref: Female)	0.26	0.18	1.42	.158
Training Location: Yes (ref: No)	0.23	0.19	1.19	.235
Culture: Yes (ref: No)	0.04	0.18	0.20	.842
Total Years in Practice: 1-5 (ref: 11-15)	0.33	0.25	1.33	.186
Total Years in Practice: 6-10 (ref: 11-15)	0.16	0.24	0.68	.495
Total Years in Practice: 16-20 (ref: 11-15)	1.05	0.31	3.45	.001*
Total Years in Practice: 21-25 (ref: 11-15)	0.32	0.34	0.92	.358
Total Years in Practice: 24-30 (ref: 11-15)	0.96	0.32	2.96	.003*
Total Years in Practice: 31-35 (ref: 11-15)	0.55	0.36	1.51	.132
Total Years in Practice: >36 (ref: 11-15)	0.36	0.57	0.62	.533
Specialty: GMP (ref: Emergency Department)	0.53	0.42	1.26	.21
Specialty: Oncologist (ref: Emergency Department)	0.87	0.74	1.18	.239
Specialty: Other Specialty (ref: Emergency Department)	0.66	0.45	1.46	.145
Specialty: Resident (ref: Emergency Department)	0.68	0.48	1.43	.154
Specialty: Urologist (ref: Emergency Department)	0.24	0.83	0.29	.772

Note. $F(19,178) = 2.09$, $P = 0.007$, $R^2 = 0.18$

Table 7 below displays results of belief scores predicted by screening, stage of cancer, age, gender, race, training location, culture, total years in practice, and specialty among physicians in Zimbabwe. Analysis of the results of the study show that PC belief predictors are stage of cancer *(p = .004),* screening *(p = .038),* race *(p = .000),* training *(p = .002)* and total years of practice *(p =.024)*. Screening, gender, culture, and specialty were not found to significantly predict belief scores as shown in Table 4. The direction of influence is seen by the Pearson coefficient which is negative for Screening and Stage of Cancer and positive for Race, Training Location and Total" years of Practice.

Table 7.

Correlation Descriptive Statistics for Belief Scores predicted by Screening, Stage of Cancer, Age, Gender, Race, Training Location, Culture, Total Years in Practice, and Specialty among Physicians in Zimbabwe

Predictor Variable	*n*	*M*	*SD*	*p-value*	Pearson Correlation Coefficient
Screening	199	1.250	.434	.433	-.056
Stage of cancer	199	2.790	.949	.004*	-.203**
Age	199	2.11	1.160	.038*	.147*
Gender	199	1.785	.412	.287	.076
Race	199	2.060	.396	.000**	.259**
Culture	199	1.780	.415	.139	.105
Training Location	47	3.532	2.677	.002**	.431**
Total Years of Practice	199	3.040	2.002	.024*	.160*
Specialty	198	3.025	1.578	.250	-.082

**. Correlation is significant at the 0.05 level (2-tailed)*
***. Correlation is significant at the 0.01 level (2-tailed)*

Table 8 below displays results of attitude scores predicted by screening, stage of cancer, age, gender, race, training location, culture, total years in practice, and specialty among physicians in Zimbabwe. Analysis of the results show that attitude scores were significantly predicted by screening *(p = .000),* stage of cancer *(p = .005),* race *(p = .000),* and by culture *(p = .020).* This implies that Zimbabwean physician attitudes can be predicted by cancer stage, age of the physicians, their training location and by their total years in practice/experience. These factors can either affect attitude negatively or positively as shown by both ends of the Pearson correlation coefficient (Table 8). Age, gender, training location, and total years in practice were not found to significantly predict attitude scores.

Table 8.

Correlation Descriptive Statistics for Attitude Scores predicted by Screening, Stage of Cancer, Age, Gender, Race, Training Location, Culture, Total Years in Practice, and Specialty among Physicians in Zimbabwe

Predictor Variable	*n*	*M*	*SD*	*p-value*	Pearson Correlation Coefficient
Screening	200	1.250	.434	.000**	-.335**
Stage of cancer	200	2.790	.949	.005**	-.199**
Age	200	2.110	1.160	.387	.062
Gender	200	1.785	.412	.439	-.055
Race	199	2.060	.396	0.000**	.259**
Culture	200	1.780	.415	.020*	.165*
Training Location	47	3.532	2.677	.182	.198
Total Years of Practice	200	3.040	2.002	.127	.108
Specialty	199	3.025	1.578	.533	.044

**. Correlation is significant at the 0.05 level (2-tailed)*
***. Correlation is significant at the 0.01 level (2-tailed)*

Table 9 shows Statistics for Multiple Regression of Attitude Scores predicted by Screening, Stage of Cancer, Gender, Training Location, Culture, Total Years in Practice, and Specialty among physicians in Zimbabwe. Results show that significant predictors for attitude scores are Screening *(p - .000)*, Stage of PC *(p = .005)*, Race *(p = .011)* and Culture *(p = .020)*. Pearson Correlation Coefficients are displayed respectively showing the direction of the effect these attributes have on the attitudes physicians have towards PC screening and diagnosis.

Table 9.

Statistics for Multiple Regression of Attitude Scores predicted by Screening, Stage of Cancer, Gender, Training Location, Culture, Total Years in Practice, and Specialty among Physicians in Zimbabwe

Predictor Variable	Crude risk of B	SE	p-value	Adjusted* risk or B	Confidence intervals
Screening	-.335	.067	.000*	-.335	(-.467, -.203)
Stage of cancer	-.091	.032	.005*	-199	(-.154, -.028)
Age	.023	.027	.387	.062	(-.029, .076)
Gender	-.058	.075	.439	-.055	(-.206, .090)
Race	.196	.077	.011*	.179	(.045, .347)
Training Location	.033	.024	.182	.198	(-.016, .081)
Culture	.172	.073	.020*	.165	(.028, .317)
Total Years of Practice	.024	.015	.127	.108	(-.007, .054)
Specialty	.012	.020	.533	.044	(-.026, .051)

Adjusted for

**Resident = Doctors who have completed their training and are in their supervision years before practicing independently

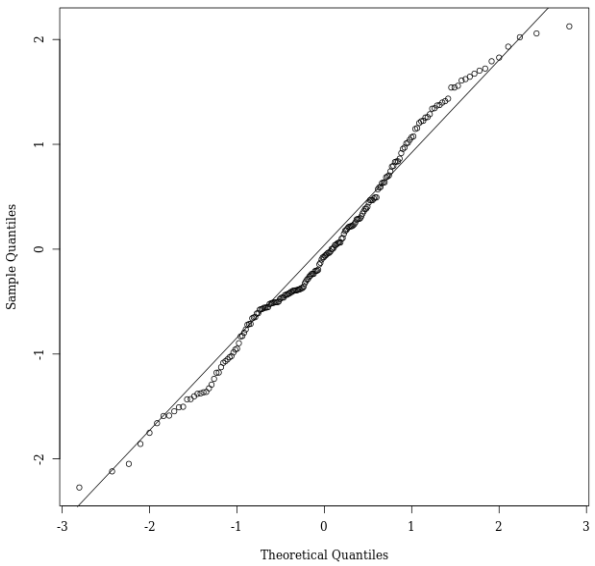

Figure 43. Q-Q Scatterplot for normality for Screening, Stage of Cancer, Gender, Training Location, Culture, Total Years in Practice, and Specialty predicting Belief score

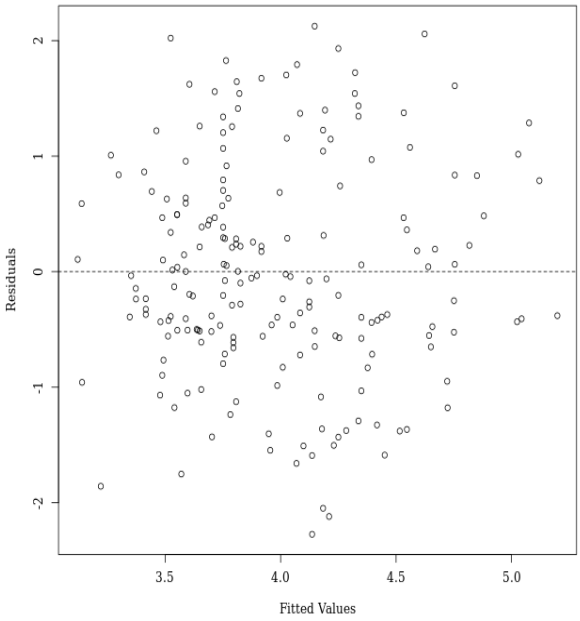

Figure 44. Residuals scatterplot for homoscedasticity for Screening, Stage of Cancer, Gender, Training Location, Culture, Total Years in Practice, and Specialty predicting Belief score

To examine the research question, a multiple linear regression was conducted to assess if Screening, Stage of Cancer, Gender, Training Location, Culture, Total Years in Practice, and Specialty predicted Attitude score. Prior to analysis, the assumption of normality was assessed with a Q-Q scatterplot (see Figure 45). The assumption was met because the points do not deviate strongly from the normality line. The assumption of homoscedasticity, which assumes that scores are normally distributed about the regression line, was assessed through examination of scatter plots. The assumption of homoscedasticity was assessed with a residuals scatterplot (see Figure 46). For the

assumption to be met the points must be rectangularly distributed and the curvature line must be approximately straight. The assumption of homoscedasticity was met.

The results of the linear regression were significant, $F(19, 179) = 3.23$, $p = .001$, $R^2 = 0.26$, suggesting that Screening, Stage of Cancer, Gender, Training Location, Culture, Total Years in Practice, and Specialty accounted for 26% of the variance in Attitude score. The individual predictors were examined further. Screening was a significant predictor of Attitude score, $B = 0.29$, $p < 0$ suggesting that for every one unit increase in Screening, Attitude score increased by 0.29 units. Stage of Cancer was not a significant predictor of Attitude score, $B = 0.18$, $p = 0.092$. Gender was not a significant predictor of Attitude score, $B = 0.03$, $p = 0.801$. Training Location was a significant predictor of Attitude score $B = -0.01$, $p = 0.016$, indicating that for every one unit change in training location Attitude score decreased by .01 units. Culture was not a significant predictor of Attitude score, $B = -0.08$, $p = 0.294$. Total Years in Practice was not a significant predictor. Specialty was not a significant predictor of Attitude score, $B = -0.11$, $p = 0.136$. Results of the multiple regression are presented in Table 10.

Table 10.

Statistic for Multiple Linear Regression of Attitude predicted by Screening, Stage of Cancer, Gender, Training Location, Culture, Total Years in Practice, and Specialty among Physicians in Zimbabwe

Predictor Variable	*B*	*SE*	*t*	*p*
Screening: Yes (ref: No)	0.29	0.07	4.18	.001*
PC Stage 2 (ref: Stage 1)	0.18	0.11	1.69	.092
PC Stage 3 (ref: Stage 1)	0.03	0.10	0.25	.801
PC Stage 4 (ref: Stage 1)	-0.01	0.11	-0.12	.904
Male (ref: Female)	-0.08	0.07	-1.05	.294
Training Location: Yes (ref: No)	-0.18	0.08	-2.43	.016*
Culture: Yes (ref: No)	-0.11	0.07	-1.50	.136
Total Years in Practice: 1-5 (ref: 11-15)	0.03	0.10	0.27	.785
Total Years in Practice: 6-10 (ref: 11-15)	-0.04	0.09	-0.46	.644
Total Years in Practice: 16-20 (ref: 11-15)	-0.21	0.12	-1.70	.09
Total Years in Practice: 21-25 (ref: 11-15)	-0.15	0.14	-1.06	.29
Total Years in Practice: 24-30 (ref: 11-15)	-0.07	0.13	-0.57	.567
Total Years in Practice: 31-35 (ref: 11-15)	0.20	0.14	1.37	.171
Total Years in Practice: >36 (ref: 11-15)	0.15	0.21	0.74	.461
Specialty: GMP (ref: Emergency Department)	-0.06	0.17	-0.37	.712
Specialty: Oncologist (ref: Emergency Department)	-0.37	0.29	-1.26	.21
Specialty: Other (ref: Emergency Department)	0.01	0.18	0.03	.976
Specialty: Resident (ref: Emergency Department)	-0.03	0.19	-0.15	.877
Specialty: Urologist (ref: Emergency Department)	0.42	0.33	1.26	.211

Note. $F(19,179) = 3.23$, $P = .001$, $R^2 = 0.26$

Table10b are results of further analysis of the statistics for Multiple Regression of Attitude Scores predicted by Screening, Stage of Cancer, Gender, Training Location, Culture, Total Years in Practice, and Specialty among Physicians in Zimbabwe showing risk of *B*, *SE*, *p* -values and confidence intervals. Results show the negative risk associated with the significant predictors Screening, Stage of cancer, race and Culture.

Table 10b

Statistics for Multiple Regression of Attitude Scores predicted by Screening, Stage of Cancer, Gender, Training Location, Culture, Total Years in Practice, and Specialty among Physicians in Zimbabwe

Predictor Variable	Crude risk of B	SE	p-value	Adjusted* risk or B	Confidence intervals
Screening	-.335	.067	.000*	-.335	(-.467, -203)
Stage of cancer	-.091	.032	.005*	-199	(-.154, -.028)
Age	.023	.027	.387	.062	(-.029, .076)
Gender	-.058	.075	.439	-.055	(-.206, .090)
Race	.196	.077	.011*	.179	(.045, .347)
Training Location	.033	.024	.182	.198	(-.016, .081)
Culture	.172	.073	.020*	.165	(.028, .317)
Total Years of Practice	.024	.015	.127	.108	(-.007, .054)
Specialty	.012	.020	.533	.044	(-.026, .051)

- Adjusted for
- **Resident = Doctors who have completed their training and are in their supervision years before practicing independently

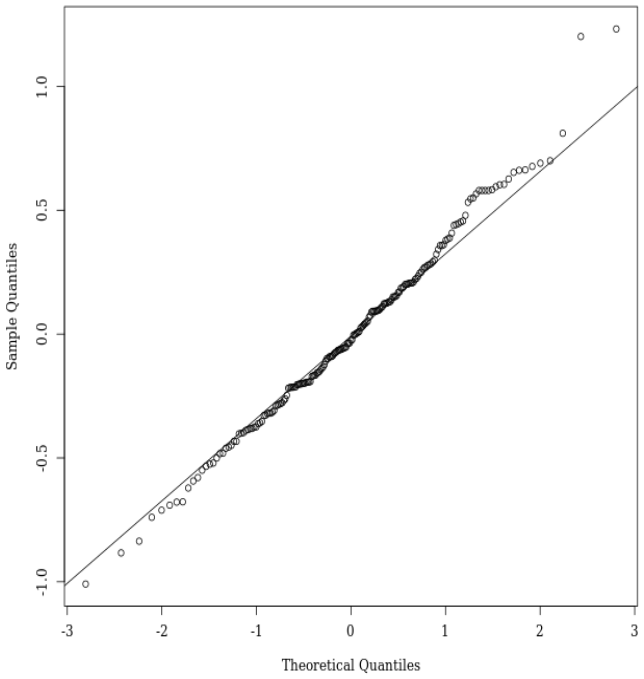

Figure 45. Q-Q scatterplot for normality for Screening, Stage of Cancer, Gender, Training

Location, Culture, Total Years in Practice, and Specialty predicting Attitude score

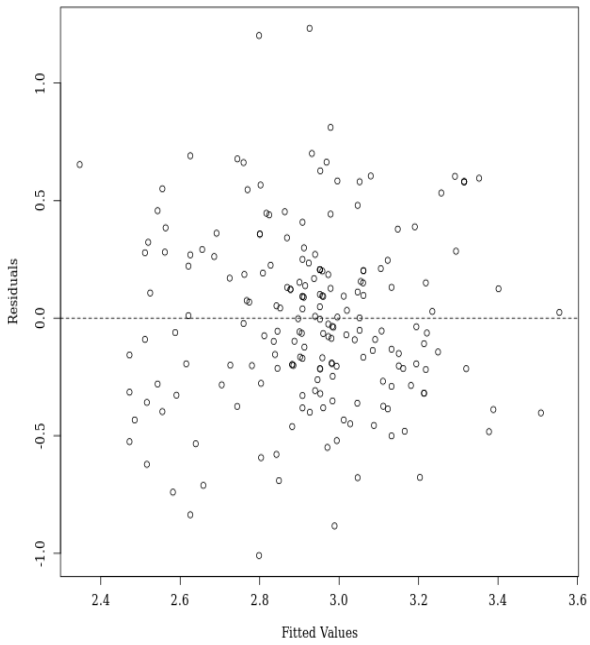

Figure 46. Residuals scatterplot for homoscedasticity for Screening, Stage of Cancer, Gender, Training Location, Culture, Total Years in Practice, and Specialty predicting Attitude score

RQ3: Are there statistically significant differences in attitudes and beliefs of prostate screening for physicians in Zimbabwe by where they were trained (locally vs. foreign)?

H30: There are not statistically significant differences in attitudes and beliefs of prostate screening for physicians in Zimbabwe by where they were trained (locally vs. foreign).

H3a: There are statistically significant differences in attitudes and beliefs of prostate screening for physicians in Zimbabwe by where they were trained (locally vs. foreign).

A multivariate analysis of variance (MANOVA) was conducted to assess if there were differences in Belief score and Attitude score by Training Location. Prior to analysis, the assumption of normality was assessed by conducting Shapiro Wilk tests for each dependent variable. Results of the tests showed significance for Belief score (p = .010), and significance for Attitude score (p = .009), suggesting that the assumption was not met for Belief score and Attitude score. Multivariate normality was assessed by examining Mardia's test. Mardia's test was not significant for skew, p = .342, and not significant for kurtosis, p = .976, and thus multivariate normality was met. The assumption for equality of variance was assessed with Levene's test for each dependent variable for each independent variable. For Training Location, results of the test showed no significance for Belief score (p = .285) and no significance for Attitude score (p = .538), suggesting that the assumption was met for all dependent variables.

The results of the MANOVA were significant for Training Location, $F(2, 196) = 5.42$, p = .005, suggesting that there were differences in Belief score and Attitude score by Training Location. Since significance was found, the individual ANOVAs were conducted. The ANOVA for Belief score was not significant, $F(1, 197) = 0.65$, p = .420, suggesting that there were not differences in Belief score by Training Location. The ANOVA for Attitude score was significant, $F(1, 197) = 10.67$, p = .001, suggesting that there were differences in Attitude score by Training Location. Results of the MANOVA and ANOVA are presented in Table 11. Table 12 presents the adjusted means and standard errors for the dependent variables by Training Location.

Table 11.

MANOVA and ANOVA Results for Belief score and Attitude score by Training Location

Variable	Multivariate *F*	Univariate *F*	
		Belief score	Attitude score
Training Location	5.42*	0.65	10.67*

Note. * $p \leq .05$. ** $p \leq .01$. Otherwise $p > .05$

Table 12

Adjusted Means and Standard Errors for Belief score and Attitude score by Training Location

Score	Group	*n*	*Adj. M*	*SE*
Belief score	Training Location			
	No	42	4.09	0.16
	Yes	157	3.94	0.08
Attitude score	Training Location			
	No	42	3.12	0.07
	Yes	157	2.88	0.03

RQ4: Are there statistically significant differences in the proportion of physicians following professionally established guidelines by where they were trained (locally vs. foreign)?

$H3_0$: There are not statistically significant differences in the proportion of physicians following professionally established guidelines by where they were trained (locally vs. foreign).

$H3_a$: There are statistically significant differences in the proportion of physicians following professionally established guidelines by where they were trained (locally vs. foreign).

To address the research question a *z* test of two proportions was conducted. For the analysis, statistically significant differences in the proportion of physicians following professionally established guidelines where they trained were assessed. Findings of the analysis indicate that there were no statistically significant differences in the proportion of physicians following professionally established guidelines where they were trained. Results of the analysis are included in Table 13.

Table 13

Results of the z Test of Two Proportions

	Trained Locally	
Follows Professionally Established Guidelines	Yes	No
Yes	107 (68.2%)	34 (81.0%)
No	50 (31.8%)	8 (19.0%)

Conclusion

The current cross sectional quantitative study was conducted in Zimbabwe to establish physicians' attitudes and beliefs regarding PC screening and diagnosis. Data from 206 (n = 206) physicians who were registered and actively practicing medicine in Zimbabwe through private clinics, group private practice, FBO (faith based organization) hospitals, private company owned health care centers, and government health care facilities in the country was used in the data analysis. Findings indicated that participating physicians were neutral in their attitudes and beliefs. While the model for belief score predicted by screening, stage of cancer, gender, training location, culture, and total years in practice was significant, none of the individual predictors were significant. The model for attitude score predicted by screening, stage of cancer, gender, training location, culture, and total years in practice was also significant; screening and training location were significant predictors. Findings of the MANOVA for differences in belief and attitude score by training location were also significant; however, the post hoc analysis showed that the ANOVA for attitude was significant while belief was not. Finally, the *z* test of two proportions indicated that there were no differences in adherence to established procedure by training location (local or foreign).

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

This chapter is a discussion of the results of the study findings as it relates to physicians beliefs and attitudes in Zimbabwe from the survey. The discussion will be presented question by question as presented in the methodology section.

The study was a cross sectional quantitative study conducted to establish physicians' beliefs and attitudes on prostate cancer screening and diagnosis among Zimbabwean physicians. Effort to unearth deep seated attitudes and beliefs were done using the PABQS tool, designed by the researcher using previously validated tools Burns' Cancer Belief Scales and the Attitudes Scale. Antonovsky new Salutogenic model was used as the study's conceptual framework as well as the theory of reasoned action (TRA). The study objectives were to establish: 1. Current Zimbabwean physicians' attitudes and beliefs towards PC screening and diagnosis; 2. Reveal physicians' screening practices, diagnostic patterns, and relationships, based on physician self-reported trends extrapolated from physician beliefs and attitudes, demographic data, gender, training schools, culture, age, practice experience, specialty, and stage of diagnosis of PC in patients compared against internationally recognized standards; 3. Establish statistically significant differences, if any, in Zimbabwean physician practices based on whether physicians were locally or foreign trained as a cultural attribute/dimension of cultural training / background to their beliefs' originations and; 4. Establish relationships, if any, among and between variables of physician gender, age, practice experience,

qualifications, cultural beliefs and attitudes, and cultural training / background (locally or foreign trained).

A secondary objective of the study was to establish the existence/non-existence of guidelines for screening, diagnosis, treatment and rehabilitation of prostate cancer in Zimbabwe and use this to establish or improve conditions if any are available. In order to fulfil these objectives about physicians' beliefs and attitudes, the following questions and hypothesis were investigated:

Summary of the study findings

Belief Scores Discussion

RQ1: What are the current attitudes and beliefs of Zimbabwean physicians towards PC screening and diagnosis?

Results of the study came out with a statistical conclusion that physicians in Zimbabwe are neutral in their beliefs about prostate cancer. While this was the case summation wise, looking at the different belief items individually gives a slightly different perspective of how contextually respondents viewed each belief. Some responses in the belief items were neutral, some were skewed towards the positive and some were negatively skewed. Of the 22 beliefs items, 16 were neutral, implying the majority of respondents marked level 4 on the Likert scale 1 to 7. The 16 neutral belief items covered; Belief 1 (Hopelessness/Hopefulness)., Belief 2 (Certain death/Being cured), Belief 3 Helplessness/Control), Belief 4 (Severe constant untreated pain/Painless), Belief 6 (Pessimism/Optimism), Belief 7 (Terror/No Fear), Belief 9 (Worthlessness/Worth), Belief 10 (Shame/Pride), Belief 11 (Body mutilation/No body

change), Belief 12 (Foul odors/Pleasant odors), Belief 13 (Dependency/Independency), Belief 15 (Rejection/Acceptance), Belief 16 (Alienation/Belonging), Belief 18 (Not being wanted/Being wanted), Belief 19 (Unloved/Loved), and Belief 20 (Wasting away/Nourished).

From the perspective of these findings this is a positive finding in the sense that physicians in Zimbabwe are non-judgmental in their approach to prostate cancer. This implies that they afford their patient the benefit of the doubt as and as a community resource they support Antonovsky proposal adding to resistance. Doctors are not giving false hope to their patients neither are they writing off their patients shown by their responses on Belief item 2 (Certain death/Being cured). This also shows that they counsel their patients and care givers in a neutral but positive approach as evidenced by Belief items 12 (Foul odors/Pleasant odors), Belief item 9 (Worthlessness/Worth), Belief 6 (Pessimism/Optimism). This suggests that they are not unrealistically positive or discouragingly negative. While this is a theoretical perspective from the results of the study, it is not known how they interact with actual patients, at different stages of prostate cancer clinically, this can be translated and assumed as how would behave and present themselves as a General Resistance Resource.

Only 2 out of the 22 items were strongly positive with a belief score of 7 (Belief item 5 (Punishment /No punishment) and Belief item 8 (Unknown/Known)). Considering how the general population views disease causation in a traditional cultural context in Zimbabwe (Curse by God or traditional spirits, infidelity, other myths and witchcraft), this is a positive finding supporting physicians are using knowledge acquired in their

training institutions, without influence from traditional, cultural and religious beliefs. This supports that training institutions are effective in their deliverance of approaches to disease management supporting that physicians are delivering the services as recommended by the WHO and supporting public health institutions worldwide. Realizing that there are different schools of thought, findings suggest that Zimbabwean physicians are truthful to their patients about what they know about the disease (Belief item 8 (Unknown/Known). This suggests that Zimbabwean physicians tell their patients that causes of PC are known and there are established intervention methods. Negativity in this belief item would imply reinforcing the misconceptions about disease causation derived from traditional beliefs, myths, religious and misinformation.

The remaining belief items (4) were negative and these included Belief items 14 (Sudden overwhelming life changes/No life changes), 17 (Extreme suffering/No suffering), and a strongly negative 21 (Uncertain future/Certain future) and 22 (Destructive unconditioned growth/Normal growth). This portrays a positive finding in the manner that Zimbabwean physicians would interact positively with prostate cancer patients, their families and care givers by presenting factual information about impact of prostate cancer on patients and their families. This will help patients and families in establishing management pathways through supposedly physician-suggested methods. Positivity in these belief items would imply physicians will be giving their patients and care giver false hope which will fail equipping the prostate cancer victims/sufferers.

Attitudes Scores Discussion

Evidence in psychology findings suggests that anyone's attitude affect their behavior. Views on prostate screening and diagnosis matter. Study results show that 62% (128/204 respondents) of the surveyed Zimbabwean physicians believe that PC screening benefits outweigh the risks. There is controversy about whether men should be screened for prostate cancer or not, citing that risks outweigh benefits considering age, method of screening, and existing commodities. Realizing that PC is more prevalent in blacks than any racial group, there in is need/reason to establish Zimbabwean physician attitudes on PC screening and diagnosis for Zimbabwean population is predominantly black (ZIMSTATS, 2012). This is relevant and contributes to reducing morbidity and mortality rates of PC as Zimbabwe constitutes the affected population, considering the risk attributed to black men compared to other racial groups.

The next highest responses to Attitude question 1 (22%) agree that benefits outweigh risk adding to the above (62%) to make a total positive response of 84%. Hence, we would assume that 84% of Zimbabwean physicians are inclined to screen their patients for PC. While this is a resource-poor African country, suffering all sorts of modern world disadvantages, results are encouraging because physicians are very likely to be proactive and inclined to follow recommended screening guideline's for PC in men. However, we were not able to establish the uptake of PC screening because there is currently no reliable relevant statistics of the disease in Zimbabwe.

Encouraging results were obtained in the 65% of physicians who disagreed with the statement that discussing harms and benefits of screening causes unnecessary anxiety

in patients. This translates to that, the majority of physicians in Zimbabwe will discuss harms and benefits of PC screening with their patients before screening. Ethically, it is a positive attribute to the way Zimbabwean physicians handle their patient's care adding to the current demands for addressing patients concerns about screening and treatments. Attitude question 3 ties with the above findings supporting that 76% of Zimbabwean physicians will make timer to address patients concerns. This adds to the world consensus that patients have the right to know implications of screening before the process for the concerns to be addressed. This is supported by 86% of Zimbabwean physicians agreeing patients have the right to know (Attitude question 4).

There is a mixed response on Attitude 5 concerning telling patients about the lack of effective treatment modalities to PC. 20% strongly agree that patients should be told, 26%% agree, and 22% were neutral while a total of 30% disagree. It is a concern, why such a considerable proportion (30%) of physicians will not tell their patients about the effectiveness of treatment modalities. In a country where people do not actively seek for information this complicates and adds to the burden on how patients make decisions weakening their ability to contribute positively to public health intervention outcomes. Of the respondents 50% of physicians agreed and strongly agreed they lost patients who would have been saved if PC screening was done, 30% were neutral, 19% disagreed and strongly disagreed (Attitude question 6). This implies that the majority of surveyed Zimbabwean physicians believe 50% believe screening could have saved lives. The majority of physicians are supportive to PC screening. Of the surveyed physicians 44% had friends/relatives who died of PC while 56% had no PC close friends/relatives.

Responses to Attitude question 8 show that 58% of surveyed physicians do not offer digital rectal examinations to patients at the recommended age of 40. The remainder 42%, offers DRE to their patients raising a question why the discrepancy given that this is a non-invasive method way of detecting early signs of PC indications. Of the total respondent to Attitude question 9, 42% agree they perform digital rectal examination as their first step to PC screening, the rest 58% do not perform digital rectal examination embracing findings from Attitude question 8. Results to the two questions concur very strongly suggesting the majority of Zimbabwean physicians shun away from performing DRE. This raises a very important question about physicians' beliefs and attitudes, as patients were found to have positive attitudes towards PC if physicians take time to educate them (Makado, Makado & Rusere, 2015). In a resource poor country, where resources are limited, it is concerning that physicians have a negative attitude to a low cost screening method that has great potential to save lives and has almost no side effects except for beliefs and dignity issues. Reasons why this is so can only be addressed by further studies on this specific issue. While this is the case for digital examination, the majority (72%) of physicians agree that they have no regrets for having used PSA for screening their patients (Attitude question 10). Speculating why this is so, one can only think of how objective PSA is and the reliability of the blood test findings despite current controversy surrounding the benefits of this method.

Of respondents to Attitude question 11, 54% disagree and strongly disagreed and had no doubt PC screening is worthy-while, 18% were neutral while 28% were agreed and strongly agreeable with the notion that treatment is questionable. This is an indication

the majority of physicians will offer some form of treatment to their patients. This was strongly supported by the 85% of respondents who disagreed with the statement that patients would not be educated about PC (Attitude question 12). This is strongly supportive of recommended education guidelines for PC screening for every patient before the procedure. Only a tiny proportion (15) agreed with the statement. It would be interesting to find out why this is so given that physicians in Zimbabwe are involved with public health issues.

Of the total respondents 53% indicated that their patients do not request PSA test for PC screening as a method. 18% of the responding physicians remained neutral while 28% admitted to having their patients requesting PSA test for PC screening (Attitude question 13) suggesting need to educate patients on PC screening methods so that they can exercise informed decision making. However, Makado, Makado & Rusere (2015)'s findings in a study in Zimbabwe, established that 96% of the 200 surveyed men stated they would choose to be screened for PC annually if adequately informed. This is suggestive of the discrepancy between physicians and patients willing to be screened for PC. Explaining the discrepancy requires further targeted research in the area. In the same study the researchers found that more men 40% got their information the newspaper, 30% from doctors, 18% from nurses and 12 % from family and friends (Makado, Makado & Rusere, 2015). If an overwhelming majority of surveyed men (96%) have such a positive attitude to screening, this implies that physicians need to be challenged to provide information about PC screening in order to increase uptake. Watching Zimbabwean television, I neither saw nor heard anything about PC education programs for the time I

was collecting data. It will be interesting to find out why this is so for sex is not a public subject culturally.

Attitude question 14 addressed availability of evidence that PC screening serves lives. Of the total who responded, 53% agreed that evidence that PC screening saves lives exist, 19% disagreed, and 28% remained neutral. Available evidence suggest PC screenings saves lives as recommended though there is controversy of what methods are to be used without risking men for further complications. It is also questionable why some respondents were neutral in their responses for this shows a lack of professional decision making given that physicians go through extensive education and training about the subject. This is where motivation of evidence based practice comes in, driven by continuing education practices, which is something that physicians in Zimbabwe may need to pursue, reinforced through their responsible professional bodies. This can be influenced by the Zimbabwe Medical and Dental Practitioners Council in collaboration with the Zimbabwe Medical Association, enforcing that their members update themselves with current findings during yearly registration process, which is a policy issue. The Ministry of Health and Child Welfare, the major employer of the Zimbabwean physicians can also play a major role in ensuring that doctors in the country meet the certain continuing education standards by enacting some of these policies.

While there is controversy on the benefits of screening for PC (CDC), it was interesting that, of the surveyed physicians in Zimbabwe, 55% strongly and very strongly disagreed with the statement that scientific evidence does not support routine screening for PC (Attitude question 16). Of the remainder 29% were neutral and 15% agreed with

statement. This is strongly supportive of the controversy surrounding the benefits of the different PC screening practices in many public health systems worldwide. This is an issue that will need further investigation for currently Zimbabwe has no established PC screening guidelines but is dependent on other resourceful nations like the U.S., UK, Australia, Canada and others that have long had the debate. Realizing that routine screening in public health is intended to detect disease early for appropriate intervention, to reduce mortality rates, in a country like Zimbabwe where life expectancy is very low, physicians should offer their patients PC screening for it will improve life expectancy and quality of life (ZIMSTATS, 2012).

In attempting to establish the position of physician as it relates to whether they value their clinical experiences as more important than research studies, 60% were supportive of importance of research findings compared to their field experience (Attitude question 15). This is evidence that physicians are likely to use research findings to inform their practice. This ties in with responses to Attitude question 18, whose findings established that 72% of surveyed physicians described themselves as practicing evidence based medicine, 14% remained neutral and only 13% did not agree that they practiced evidence based medicine. Only 1 %(2 of the total respondents) failed to give their position.

Findings established that 47% of the respondents say PC screening is not a standard protocol for care in the Zimbabwean community, 21% were neutral and 31% indicated PC screening is a routine protocol (Attitude question 17). Because there are no national PC cancer screening guidelines in Zimbabwe, it is interesting why 31% of the

respondents agreed to existence of routine screening guidelines. This is supportive of differences and inequalities in public health services provision in different parts of the country, implying the supportive group may have local PC screening policies in their practices/institutions, expanding the controversy surrounding the PC cancer screening debate. An interesting finding of the study was in Attitude question 19, where the majority (39%) of surveyed physicians indicated that failure to order PSA test could result in risking malpractice liability lawsuits, while 29% remained neutral and 31% did not attribute this to any malpractice legal action. With the current trends in medical practice, it is very surprising that the undecided almost equal those who disagree, which may mean lack of an understanding of the current medicolegal trends in Zimbabwe and elsewhere.

RQ2: Do screening practices, stage of prostate cancer diagnosis, physician's gender, training schools, specialty, culture, and years of experience predict physician's attitudes and beliefs?

While there may be hidden aspects of the study beyond this analysis, findings of the study established that cumulatively, screening practices, stage of prostate cancer diagnosis, physician's gender, training schools, specialty, culture, and years of experience predict physician's attitudes and beliefs. Considering each predictor individually, positive attribute was established in that only total years in practice was found to be a significant predictor of belief scores *($p = .001$).* It is a valuable tool to be experienced, as in many areas, for experience is the best teacher. Physicians with more experience are more likely to be critical of the methods of screening used in PC. Looking at the demographics of the

physicians in Zimbabwe as established by the study, evidence suggests that the majority are young inexperienced physicians who lack the insight and foresight gained through experience. It is therefore true to relate and attribute this to their lack of decision making and remaining neutral to most questions implies lack of experience as indicated by responses to Demographic question 25 where statistics indicated that more than half of surveyed physicians (106) had less 10 years of clinical experience.

$H2_0$: Screening practices, stage of prostate cancer diagnosis, physician's gender, training schools, specialty, culture, and years of experience do not predict physician's attitudes and beliefs.

$H2_a$: Screening practices, stage of prostate cancer diagnosis, physician's gender, training schools, specialty, culture, or years of experience predict physician's attitudes and beliefs.

Findings support the zero hypotheses that Screening practices, stage of prostate cancer diagnosis, physician's gender, training schools, specialty, culture, and years of experience do not predict physician's attitudes and beliefs and rejects the alternate hypotheses that screening practices, stage of prostate cancer diagnosis, physician's gender, training schools, specialty, culture, or years of experience predict physician's attitudes and beliefs.

RQ3: Are there statistically significant differences in attitudes and beliefs of prostate screening for physicians in Zimbabwe by where they were trained (locally vs. foreign)?

Using results of the MANOVA it was determined that differences by Training by location, $F(2, 196) = 5.42$, $p = .005$, were significant which suggested that Attitude and

Beliefs were significant by Training location. To ensure validity Anova was conducted which ruled out significance for Belief score versus Training location, $F(1, 197), p = 0.65$, but verified significance for Attitude scores, $F(1, 197) = 10.67, p = .001$, suggesting that there were differences in Attitudes scores by Training Location (Table 11 & 12). This is indicative of how attitudes affect to one's behavior and way of practice as it pertains to PC seeing and diagnosis.

$H3_0$: There are not statistically significant differences in attitudes and beliefs of prostate screening for physicians in Zimbabwe by where they were trained (locally vs. foreign).

Findings of the study reject the null hypotheses that there are not statistically significant differences in attitudes and beliefs of prostate screening for physicians in Zimbabwe by where they were trained (locally vs. foreign).

$H3_a$: There are statistically significant differences in attitudes and beliefs of prostate screening for physicians in Zimbabwe by where they were trained (locally vs. foreign).

Study findings accept that there are statistically significant differences in attitudes and beliefs of prostate screening for physicians in Zimbabwe by where they were trained (locally vs. foreign). This now will need further studies to establish why this is so considering the diversity of schools from where these respondents where trained. This is important because training involves indoctrination. It will be important also to establish which school has the most positive or negative attitudes and compare how their study curriculums are structured.

4. *RQ4: Are there statistically significant differences in the proportion of physicians following professionally established guidelines by where they were trained (locally vs. foreign)?*

$H3_0$: There are not statistically significant differences in the proportion of physicians following professionally established guidelines by where they were trained (locally vs. foreign).

$H3_a$: There are statistically significant differences in the proportion of physicians following professionally established guidelines by where they were trained (locally vs. foreign).

Findings of the study accepted that there are not statistically significant differences in the proportion of physicians following professionally established guidelines by where they were trained (locally vs. foreign) rejecting the alternate hypotheses that there are statistically significant differences in the proportion of physicians following professionally established guidelines by where they were trained (locally vs. foreign). This supports the position that in Zimbabwe there are no established guidelines for PC screening at least before 2013. If they are, it may raise the question of institutional policy as to how different institutions are organized and practice medicine throughout the country.

Discussion of findings

There is no doubt that one's beliefs affect their attitudes. It is reasonable to assume it affects how they live, do things in life, make decisions, how they perceive situations, and associate themselves with their environment, etc. The only time information becomes knowledge is when it is passed to another person or others who will put it to use. Results from the study revealed a number of facts that may not have been known as follows:

- There are more male physicians/doctors in Zimbabwe which may indicate the traditional culture where men dominate women in the many areas including the field of medicine. It also reveals the belief and trend where most families would send their male children to school and not the females.
- Results show that there are younger doctors (age group 25-40) than there are older ones (41-65). It is not clear why but evidence suggests that brain drain into better economies (reference) is the major factor causing the shortage of experienced physicians in the country.
- From discussion made during the survey, majority of physicians reported exhaustion and being overworked.
- According to the respondents many physicians left the country for better opportunities out of the country with most of them absorbed by the first world nations, the United Kingdom, the Americas, Australia and some in South Africa. There is lack of urologists/PC specialists in the cancer area raising the question of who is taking care of the very needy patients. A specialist at one hospital in Bulawayo was reported to have a fully booked schedule up to March of 2016 and

a patient was scheduled to see him in April of 2016 in August of 2015 as evidence of scarcity of resources. This suggests a huge gap a public health resource provision. There are very few specialists in PC care as suggested by the results with only one urologist reporting.

- There are very few radiology centers in the country for diagnostic imaging and the existing ones have outdated, donated equipment. There was only one physician among the respondents who said he was a urologist.
- The question of why there are very few older physicians (Age > 65) practicing in the country is left unanswered and while that was not the focus of this study, there is a need to explore the reasons to bring service stability in a country that has a population of 13 million and so attractive to foreigners.
- There are very few experienced doctors, with 54% of practicing physicians having practiced for less than 10 years. It is not certain why this is so in a country that has seen its life expectancy in new born children decline to approximately 31 years reducing new born life expectancies by almost 22 years (Survival/Mortality, 1998) due to HIV. However, it will be interesting to have this question answered for one would expect to have doctors live and practice longer especially in countries like Zimbabwe where they are considered the most talented and educated.
- Data show that most physicians are practicing in government hospitals and private practices while there are very few faith based facility doctors as well as municipal and rural practicing physicians. This is worrying considering that physicians

branch to private/independent practice too soon, where they are not guided as soon as they finish their residencies, again raising the issue of experience. This is complicated by the lack of PC screening guidelines. It is doubtful as to why this is happening but the struggling economy of the country could be a major contributing factor. This leaves a very huge public health issue in the rural areas for data supports the desertion of these areas by physicians, leaving them without doctors' services, hence the lack of prostate cancer knowledge in men, may be attributed to deficiencies in staff, a resource deficit according to the Salutogenic model.

While the survey response are was fairly reasonable the researcher found there was a lot of resistance in participation by mainly the junior doctors whose participation sometimes depended on their senior personnel /registrars for fear of retribution. A number of junior doctors revealed to the researcher that they would only participate in the study after their registrars gave them permission to do so. While majority of the participants completed the questionnaire in its entirety, a few left the questionnaires partially completed which invalidated their responses. Response trends showed that Zimbabwean physicians are trained mainly in the country with very few trained externally, mainly in Cuba, Europe, Russia, and some African countries. This supports the value of international relationships between countries and one can see that those country that support public health issues in developing nations are the most giving aide to the country by training its doctors. There were very few foreign physicians working in the country, which may be a reflection of the poor socioeconomic conditions and political

situation in Zimbabwe which has created major personnel exchanges with other countries creating resource deficit.

There was only one physician from the United States among the respondents, who happened to be working for a central hospital focusing on research. There is a public health outcry in a country where so many patients are at risk of developing PC. One patient was sick, complicating from signs of undiagnosed urinary tract issues, infertility, needed differential diagnosis and was in a lot of pain but could only be told the sad news, there was no urologist appointment. Observation by the researcher noticed conflict of interest by physicians working in government institutions who left their responsibilities for either locums or their private practices, where they get paid better salaries. This raises the public health concern/outcry as to who serves the poor populations in public health institutions where most people seek help for they are the only better equipped facilities in the nation, where they can afford, but then there are no doctors to serve them. During the questionnaire distribution, the researcher found out that most of the government institutions physicians were gone by 10 o'clock in the morning and no one knew where they had gone. The ward rounds, which constitute the most important patient evaluation opportunity were rapid, short, and rushed, raising a quality care issue. Occasionally you would find one doctor in ward doing a ward round showing the situation is very difficult for nursing managing the wards.

Interviewing the nursing staff and admitted patients established that they are aware that doctors will be gone to their private practices or to work for locums to raise more money. In the researcher's presence, a patient was told to go to a private clinic if he

wanted to see a doctor immediately. This again is a demonstration of lack of policy and governance as shown in most developed nations where accountability is paramount and foremost. There is need for policy review in all these places to address current attendance job policies by these physicians. One has to question as to whether these institutions have attendance policies for their physicians.

I found that most Zimbabwean doctors resend participating in research and it is fair to say that their curriculums may not cover much about research, although they are aware of its value. Scarcity of internet service was also an issue for Survey Monkey responses were limited to only 22 respondents of the total 208 who responded. There is no doubt that some doctors whose knowledge about PC require updating, considering that there was a sizeable number of respondents whose responses showed a lack of knowledge related to how they should respond as professionally trained personnel. However, what they do with their knowledge is revealed in their attitude and beliefs as shown in the data trends which may have led to the neutrality conclusion of the beliefs and attitudes in general. There is a general consensus in the methods they use in PC screening. Data show that doctors believe in PC screening as a general rule as shown in the following table. Overall (Table 14), 75% agree they screen their patients versus 25% who said they did not who included 3% who abstained from answering the question. Of the total respondents 14% said they do not screen their patients for PC during initial examinations, 51% agreed to using DRE, 33% use PSA and 2% use TRUS for initial screening. There is a general consensus that most physicians use DRE which is a less aversive method.

Table 14

Proportion of physicians who screen and do not screen patients for PC

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	150	72.8	75.0	75.0
	No	50	24.3	25.0	100.0
	Total	200	97.1	100.0	
Missing	System	6	2.9		
Total		206	100.0		

Proportion of physicians who screen and do not screen patients for PC

Public health is concerned with detection and prevention of disease and interesting results established that men in Zimbabwe tend to be diagnosed late in their suffering with the disease. Respondents indicated that 75 (36.4%) of them detect PC at Stage 3, 25.2(25.2%) at Stages 2 & 4 and 21(10.2%) at Stage1. This is a draw back in expectations of any public health system especially in systems like Zimbabwe where they do not have established standards of care and the health care system is dilapidating. However, it is encouraging to note that at the conclusion of this study was a publication of the efforts made the Ministry of Health and Child Welfare to establish cancer intervention program in the country.

Conclusion and implications of the study

While more studies are needed to unearth physicians 's beliefs and attitudes about PC, it can be concluded from the data collected, that Zimbabwean physicians' attitudes and beliefs are fairly positive and promotive towards PC screening and diagnosis. That is shown by the fact that they were neutral in their belief scale rating of the management beliefs, positive in the outcome beliefs and positive in impact beliefs as it relates to how they viewed PC as a disease.

Results showed that screening methods were not determined by whether one was male or female for they both agree their discomfort of DRE. It is certain that doctors are considered a resource by their patients hence they should avail themselves for service. They are a general resource and should facilitate identification of PC sufferers to offer men's ability to cope/resist PC effects. Their scarcity or lack of experience, lack positive attitudes in the management and negative beliefs adds to men's resistance to seek for help in the area and leads to more PC morbidity and mortality rates. If PC could be reduced by eating garlic, as suggested by Arunkumar, Vijayababu, Srinivasan, Aruldhas & Arunakaran (2006) and Lamm & Riggs (2001), who points to the immunopotency of onion and garlic, who else is in the position to equip/educate men, other than physicians themselves. How difficult can it be to encourage me to eat more garlic and onions to prevent them from being victims of PC as a public health intervention program.

The study revealed that Zimbabwe has very few specialized physicians/urologists to manage the rising threat of PC. Numbers suggest it has a dwindling population of

experienced physicians and a rising population of young physicians as expected but reasons are not known. Confounding this finding, the researcher established that there are no mentors to these young physicians for the number of experienced specialists are very limited and only found in central hospitals where they have teaching roles. These specialists also have their own private practices which make it difficult for the poor to afford their care, as well as raise the conflict of interest issue. This creates a service gap in government institutions when they desert their offices for their private practices, putting the burden on government who pays their salaries whether they are working or not.

Recommendations for further study

A more inclusive study of all practicing physicians is recommended to assure that results of the study represent every physician in the country, considering there are very few practicing physicians in the country. There is a need to establish the actual number of practicing physicians in the country to ensure numbers reflect actual registry. It will be a good idea to establish the patients' beliefs and attitudes towards PC and compare that with the physicians' to establish the relationships and differences between the two groups.

It will also be useful to compare differences in beliefs and attitudes among the different groups within the physicians themselves and between male and female doctors within the context of establishing how to approach each group in improving the performance.

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Appendix A: Physician Prostate Cancer Beliefs and Attitudes Scales

QUESTIONNAIRE COMPLETION INSTRUCTIONS The following items have been selected to help give us a picture of your feelings about prostate cancer. Of course, the response you give may not be true of your feelings for all the prostate cancer items all the time. Try to respond as you feel generally about prostate cancer for each individual item and not a specific situation you experienced. Each line contains a thought related to a belief, rated in spaces 1 to 7 in between the two words or phrases. On the rating scale, 1 indicates the lowest score and 7 the highest feeling score. Please mark the level, 1 to 7, only once in a space in each line, indicating how you feel about the item as illustrated below in the following examples.

Scenario 1. ● Guilty O 2 O 3 O 4 O 5 O 6 O Innocent If you generally feel very guilty, you mark the number 1 as shown above.

Scenario 2. O Guilty O 2 O 3 O 4 O 5 O 6 ●

Innocent If you generally feel very innocent, you mark the number 7 as shown above.

Scenario 3.O Guilty O 2 O 3 ● 4 O 5 O 6 O Innocent

If you generally feel somewhere in between, you mark the number 4 as shown above. Please make sure you only mark one space on each item. More than one item marked for each item will be treated as a no response at all. Make sure you do not mark lines in between space as this will void your response. There are no right wrong answers for your response simply reflects how you feel. If you have any comments you want to make please write them at the back of the questionnaire in the space provided for comments.

SECTION 1: BELIEFS (Physcian Prostate Cancer Beliefs and Attitudes Scales)

1. Please select the option you believe most closely describes your feelings about cancer and the two words presented. (1-Hopelessness 2 3 4 5 6 7-Hopefulness.)
2. Please select the option you believe most closely describes your feelings about cancer and the two words presented. (1-Certain Death 2 3 4 5 6 7-Being Cured.)
3. Please select the option you believe most closely describes your feelings about cancer and the two words presented. (1-Helplessness 2 3 4 5 6 7-Control.)
4. Please select the option you believe most closely describes your feelings about cancer and the two words presented. (1-Severe Constant Untreatable Pain 2 3 4 5 6 7-Painless 5.)
5. Please select the option you believe most closely describes your feelings about cancer and the two words presented. (1-Punishment 2 3 4 5 6 7-No Punishment)
6. Please select the option you believe most closely describes your feelings about cancer and the two words presented. (1-Pessimism 2 3 4 5 6 7-Optimism)
7. Please select the option you believe most closely describes your feelings about cancer and the two words presented. (1-Terror 2 3 4 5 6 7-No Fear 8.)
8. Please select the option you believe most closely describes your feelings about cancer and the two words presented. (1-Unknown 2 3 4 5 6 7-Known 9.)
9. Please select the option you believe most closely describes your feelings about cancer and the two words presented. (1-Worthlessness 2 3 4 5 6 7-Worth 10.)
10. Please select the option you believe most closely describes your feelings about cancer and the two words presented. (1-Shame 2 3 4 5 6 7-Pride 11.)

Please select the option you believe most closely describes your feelings about cancer and the two words presented. (1-Body Mutilation 2 3 4 5 6 7-No Body Changes)

12. Please select the option you believe most closely describes your feelings about cancer and the two words presented. (1-Foul odors 2 3 4 5 6 7-Pleasant Odors)
13. Please select the option you believe most closely describes your feelings about cancer and the two words presented. (1-Dependancy 2 3 4 5 6 7-Independancy)
14. Please select the option you believe most closely describes your feelings about cancer and the two words presented. (1-Sudden Overwhelming Life Changes 2 3 4 5 6 7-No Life Changes)
15. Please select the option you believe most closely describes your feelings about cancer and the two words presented. 1-Rejection 2 3 4 5 6 7-Acceptance
16. Please select the option you believe most closely describes your feelings about cancer and the two words presented. (1-Alienation 2 3 4 5 6 7-Belonging)
17. Please select the option you believe most closely describes your feelings about cancer and the two words presented. (1-Extreme Suffering 2 3 4 5 6 7-No suffering)
18. Please select the option you believe most closely describes your feelings about cancer and the two words presented. (1-Not being wanted 2 3 4 5 6 7-Being Wanted)
19. Please select the option you believe most closely describes your feelings about cancer and the two words presented. (1-Unloved 2 3 4 5 6 7-Loved)

20. Please select the option you believe most closely describes your feelings about cancer and the two words presented. (1-Wasting Away 2 3 4 5 6 7-Nourished)
21. Please select the option you believe most closely describes your feelings about cancer and the two words presented. (1-Uncertain Future 2 3 4 5 6 7-Certain Future)
22. Please select the option you believe most closely describes your feelings about cancer and the two words presented. (1-Destructive Unconditioned Growth 2 3 4 5 6 7-Normal Growth

This section will measure your attitudes towards prostate cancer. Please answer every question as it pertains to you as the physician.

SECTION 2: ATTITUDES (Physician Prostate Cancer Beliefs and Attitudes Scales)

Questionnaire 1=Strongly Disagree 2=Disagree 3=Neural 4=Agree 5=Strongly Agree

a. The benefits of prostate cancer screening outweigh the risks
b. Discussing harms and benefits of prostate cancer screening causes unnecessary anxiety in my patients
c. I do not have time to discuss the harms and benefits of prostate cancer screening with my patients.
d. Patients have the right to know the implications of prostate cancer screening before they are screened.

23. We would like to know your views on prostate cancer screening and diagnosis. Some of these statements are about prostate cancer in general, while others ask specifically about digital rectum examination (DRE) and prostate cancer specific antigen (PSA).

Please rate each item below using the scale, (Strongly disagree, Disagree, Neutral, Agree, or Strongly Agree), to show your position about each one of them individually.

e. Patients should be told that it has yet to be proven that prostate cancer screening saves lives. (Strongly disagree, Disagree, Neutral, Agree, or Strongly Agree)

f. I have lost patients to prostate cancer who might have been saved if they had been screened with PSA. (Strongly disagree, Disagree, Neutral, Agree, or Strongly Agree)

g. have lost close family members or friends to prostate cancer. (Strongly disagree, Disagree, Neutral, Agree, or Strongly Agree)

h. I offer all my patients of appropriate age a digital rectal examination (DRE) as a/the first step to prostate cancer screening. (Strongly disagree, Disagree, Neutral, Agree, or Strongly Agree)

I. I routinely perform rectal examination as a first step to prostate cancer screening. (Strongly disagree, Disagree, Neutral, Agree, or Strongly Agree)

j. There have times when I have regretted ordering a PSA test for a patient. (Strongly disagree, Disagree, Neutral, Agree, or Strongly Agree)

k. I have often wondered if treatment for prostate cancer is worth it for some patients. (Strongly disagree, Disagree, Neutral, Agree, or Strongly Agree)

l. There is no need to educate patients about prostate cancer screening because in general they want to be screened. (Strongly disagree, Disagree, Neutral, Agree, or Strongly Agree)

m. My patients frequently request the PSA test. 1=Strongly Disagree 2=Disagree 3=Neural 4=Agree 5=Strongly Agree

n. There is clear evidence that prostate cancer screening saves lives. (Strongly disagree, Disagree, Neutral, Agree, or Strongly Agree)

o. My clinical experience is more important than research studies in how I handle screening for prostate cancer. (Strongly disagree, Disagree, Neutral, Agree, or Strongly Agree)

p. The scientific evidence does not support routine screening for prostate cancer. (Strongly disagree, Disagree, Neutral, Agree, or Strongly Agree)

q. Prostate cancer screening is a standard protocol for care in my community. (Strongly disagree, Disagree, Neutral, Agree, or Strongly Agree)

r. I would describe myself as someone who practices evidence-based medicine. (Strongly disagree, Disagree, Neutral, Agree, or Strongly Agree)

s. Not ordering a PSA test puts a physician at risk for malpractice liability. 1=Strongly Disagree 2=Disagree 3=Neural 4=Agree 5=Strongly Agree

The following questions will give us a picture of your demographics and prostate cancer screening and diagnosis practice patterns. Please answer each question as it applies to you personally.

SECTION 3: DEMOGRAPHICS & PRACTICE PATTERNS

24. Do you prompt your patients to have prostate cancer screening examinations?

- Yes
- No

25. Do your patients volunteer signs and symptoms of prostate cancer? Yes No

26. What is your initial screening method for prostate cancer?

- I do not screen for prostate cancer during initials examinations
- Digital Rectal Examination (DRE)
- Prostate Specific Antigen (PSA)
- Transrectal ultrasonography (TRUS)

27. Do you counsel and recommend your patients for prostate cancer screening examinations?

- Yes
- No

28. At what age are you doing your initial prostate cancer screening?

Only when patients present symptoms

- 31 - 35 years
- 35 - 40 years
- 41 - 45 years 46 - 50 years
- 51 - 60 years
- 61 - 70 years
- 70 years and older

29. How often do you screen for prostate cancer in your patients?

- Yearly
- Every two years
- As recommended by the Cancer Society of Zimbabwe

- As needed by the patient

30. Are you comfortable performing digital rectal examinations with all your patients?

- Yes
- No

31. Are your patients comfortable with you performing digital rectal examinations?

- Yes
- No

32. What is the number one factor interfering with your performance of DREs in your patients?

- I don't believe DRE is accurate Cultural barriers in the method of examination
- I am a female doctor and men are not comfortable having me perform the examination
- I am a male doctor and I feel that DRE is intrusive and I try to avoid it unless absolutely necessary
- I am uncomfortable to release results if I find them positive because of lack of treatment My survival rate of those diagnosed has been very poor

33. At what stage are the majority of your patients when they are first diagnosed with prostate cancer?

- Stage 1
- Stage 2
- Stage 3
- Stage 4

34. What is your age?

- 25 to 34
- 35 to 44
- 45 to 54
- 55 to 64
- >65

35. What is your gender?

- Female
- Male

36. What is your race/ethnicity? Asian Black Colored White

37. Did you train in Zimbabwe?

- Yes
- No

Name your training country if you trained in Africa outside Zimbabwe or other

38. If not where did you train?

- Africa but outside of Zimbabwe
- Asia
- Europe
- Australia North
- America South America
- Caribbean Islands
- India

- China
- Other

39. Does your cultural background interfere with prostate cancer screening guidelines?

- Yes
- No

If yes how?

40. Does this impact the way you screen and diagnose your patients?

- Yes
- No

41. Total years in practice?

- 1-5
- 6-10
- 11-15
- 16-20
- 21-25
- 24-30
- 31-35
- >36

42. Practice type (If you practice in more than one type of practice location, please select the practice type where you see most of your patients.)

- Individual Private Practice
- Group Private Practice Municipal Clinic/Hospital Private

- Company Hospital Mission/Church Affiliated Hospital
- Government Hospital
- Academic Institution
- Residency/faculty Practice

43. Where are you practicing most of the time?

- Zimbabwe National Army
- Central hospital
- Provincial hospital
- District hospital
- Urban clinic
- Rural clinic
- Private company hospital/clinic
- Private Practice

44. Is your practice a residency training site?

- Yes
- No
- Other (please specify)

45. Do you follow established internationally prostate cancer screening and diagnosis guidelines like those published by WHO?

- Yes
- No

46. What is your specialty?

- Emergency department General Medical Practitioner (GMP)
- Urologist
- Oncologist
- Other Specialty
- Resident

If no, which guidelines do you follow?

47. Do you currently have established guidelines for screening, diagnosis, treatment and rehabilitation of prostate cancer patients in Zimbabwe?

- Yes
- No

Please complete only if you would want results send to you.

Contact Information for Result Dissemination Only

48. If you want research results e-mailed to you please provide your e-mail, mailing address, or fax number in the space provided below

Questionnaire**Appendix B: Burns Cancer Belief Scales Copy Rights Release (Permissions)**

December 4, 2013

Burns, Nancy

To me,

You have my permission to use the Burns Cancer Belief Scales for your research. Best wishes for your success in your dissertation research.

Nancy Burns, RN, PhD, FAAN

May Christ be central in all that you do.

Appendix C: Physician Survey on Prostate Cancer Screening Copy Rights Release (Permissions)

April 04, 2014

Adoniah Mukona
1801 Red Phister Drive
Avon, IN 46123

Dear Dr. Mukona,

The American Academy of Family Physicians (AAFP) thanks you for your request for permission to use the following:

The Supplemental data Appendix from * Physician Survey on Prostate Cancer Screening (p3) from "Primary Care Physicians' Use of an Informed Decision-Making Process for Prostate Cancer Screening" Written by Volk, Robert J.

From Annals of Family Medicine
Published January/February, 2013, Vol 11, No 1

We understand that you requested the above information for use in research for a study on 'Physicians attitudes and beliefs towards prostate cancer among Zimbabwean Physicians'. You will administer the survey which will be done on two fronts through survey monkey and physically by you and your research associates.

We are happy to grant your request for permission for usage and there will not be any fee for the use of this material. Please understand that permission is granted with the understanding that there is no financial gain for you from using this material. Permission is on a one time basis and does not include distribution of materials to any other party.

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Please see that the AAFP received appropriate credit for publication of the material utilized by printing the following credit line on each copy; "Reproduced with permission from Primary Care Physicians' Use of an Informed Decision-Making Process for Prostate Cancer Screening, January/February, 2013, Vol 11, No 1, issue of Annals of Family Medicine Copyright © 2013 American Academy of Family Physicians. All Rights Reserved."

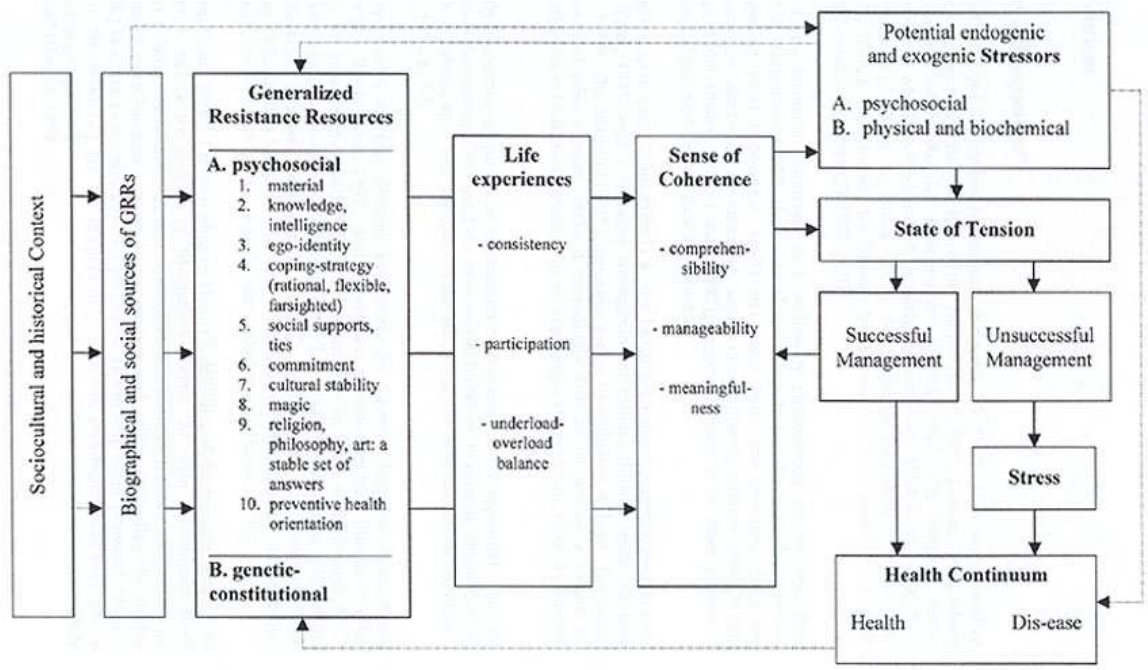
Thank you for your interest in our publication.

Sincerely,

Mindy Cleary Intellectual Property
Fax 913-906-6068
mcleary@aafp.org Request # 2735

11400 Tomahawk Creek Parkway, Leawood, KS 66211, 800-274-2237, 913-906-6000, FAX 913-906-6068

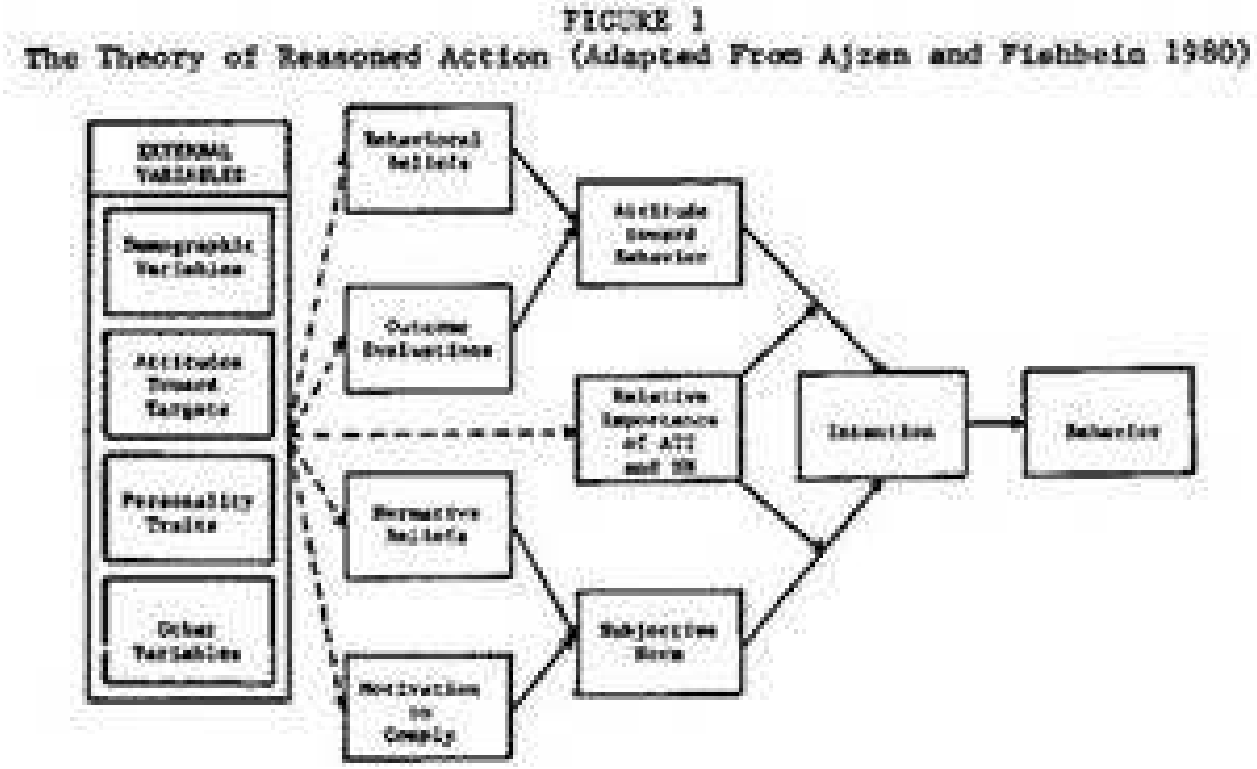
Appendix D: Salutogenesis



Source:

https://www.bing.com/images/search?q=antonovsky%27s+salutogenic+model+of+health&view=detailv2&qpvt=antonovsky%27s+salutogenic+model+of+health&id=68D9BD2EDE7C2B68A021D6EFC9086FC680D8B107&selectedIndex=6&ccid=1EBOhBWI&simid=607997190538726691&thid=OIP.Md4404e8415885aaf9500db22ae02f748o0&ajaxhist=0

Appendix E: Diagram of theory of reasoned action



Source:

https://www.bing.com/images/search?q=diagram+of+theory+of+reasoned+action&id=CC452FE1F35315D112BA5BECBE63B0974B4C063C&FORM=IARRTH

Appendix E: Informed Consent Letter

Physician Attitudes & Beliefs Questionnaire Survey (PABQS)

Informed Consent and Participation Agreement

Study Title: Attitudes and beliefs towards prostate cancer screenings and diagnosis among Zimbabwean physicians

Principal Investigator: Adoniah M. Mukona
I801 Red Phister Drive
Avon
Indiana 46123-7172
Phone: 1-317-332-9552
E-mail: adoniah.mukona@waldenu.edu

Institutional Review Board
Walden University
100 Washington Avenue South #900
Minneapolis
Minnesota 55401
Phone: 1-612-312-1210
E-mail: irb@waldenu.edu

Dear participant,

You are kindly invited to participate in this survey investigating physician attitudes and beliefs towards prostate cancer screenings and diagnosis among Zimbabwean physicians. Your participation is considered your voluntary consent and no personal data about you will be collected. The following is information about the research that may concern you in which you are giving your full consent to participate freely and voluntarily. Thank you for participating in this survey.

Description of study

Adoniah M. Mukona is a doctoral student at Walden University and is conducting research to satisfy criteria for a Doctor of Public Health in Community Health and Education. The purpose of the study is to establish and understand the relationship between physicians' attitudes and beliefs towards prostate cancer screening and diagnosis, and how these factors relate stage to prostate cancer screenings practices and diagnosis among Zimbabwean physicians.

If you give consent to participate, you will be asked to complete either a hard copy or an online questionnaire depending on your access to internet resources in your area. The questionnaire is comprised of three sections and will take approximately 30 minutes to complete. The survey will be administered primarily through survey monkey and in some cases hand delivered to you in person, depending on your situation and convenience. If you prefer a written survey, please contact the principal investigator (1-317-332-9552) and you will be provided with one. The

online survey tool will be available to you for four weeks. Please watch your e-mail closely and we ask you to answer all questions.

Benefits/Risks to the Participants

There is no monetary compensation for participating in the study. There may be no direct benefit to you as a participant. However, the responses provided will be valuable to the researcher, the research community around the world, Ministry of Health and Child Welfare, medical schools education curriculum developers, the public and other public health stakeholders in Zimbabwe. The study will benefit in contributing to increasing knowledge about prostate cancer as a public health concern in Zimbabwe and the world around. All survey responses will be kept confidential. No names or otherwise identifying data will be collected. If you have concerns regarding the risk of participation, please contact the investigators or the Institutional Review Board at Walden University to discuss your concerns at 1-612-312-1210 or send your concerns to *irb@waldenu.edu*.

Costs/Payments to the Participant

There is no cost associated with participation in the study. Your participation is considered voluntary contribution to the study. There is also no monetary compensation for participation in the study.

Confidentiality

Information obtained in this study will be kept confidential unless disclosure is required by law. All data will be secured on a password protected server for up to seven years. After seven years, data will be disposed off properly. No identifying information will be used in any portion of analysis or data reporting. Information you may provide below is only for benefit in getting results of the study send directly to you if request.

Rights to withdraw from the study

- You are entering into this contract to participate solely based on your interest to be a voluntary participant.
- You return have the right to withdraw from the study at any point as any other participant.
- You acknowledge you have read and completely understand this informed consent. You understand that participation is completely voluntary and you can withdraw from the study at any time.

If you have any questions about any aspect of the study, please contact the researchers or IRBs at Research Council of Zimbabwe (4-304787/304733/304861) and Walden University (1-612-312-1210) or send your concerns to *irb@waldenu.edu*. Completion of this questionnaire implies your consent to participate. If you want feedback from the study please call the primary investigator/researcher directly at the above contact phone number or e-mail address. You acknowledge that information you will provide will not be used for any other purpose other than communicating results of the study in which you took part as a voluntary participant.

Thank you for your participation.

Sincerely,

Adoniah M. Mukona (PT, DPT, MBA, PhD student)
(Walden University Public Health Student & Primary Investigator)

Appendix F: Participation Letter

Study Title: Attitudes and beliefs towards prostate cancer screenings and diagnosis among Zimbabwean physicians

Principal Investigator: Adoniah M. Mukona
I801 Red Phister Drive
Avon
Indiana 46123-7172
317-332-9552

Institutional Review Board
Walden University
100 Washington Avenue South #900
Minneapolis
Minnesota 55401
Phone: 1-866-492-5332
E-mail: help@waldenu.edu

Dear participant,

Thank you for participating in this survey research. The following is information about the research that may concern you in which you are giving your full consent to participate freely and voluntarily.

Description of study

Adoniah M. Mukona is a doctoral student at Walden University and is conducting research to satisfy criteria for a Doctor of Public Health in Community Health and Education. The purpose of the study is to establish and understanding the relationship between physicians' attitudes and beliefs towards prostate cancer screening and diagnosis, and how these factors relate stage of prostate cancer diagnosis among Zimbabwean physicians .

If you give consent to participate, you will be asked to complete an online questionnaire. The questionnaire is comprised of three sections and will take approximately 20 minutes to complete. The survey will be administered using survey monkey and in some cases hand delivered to you in person depending on your situation and convenience. If you prefer a written survey, please contact the principal investigator and you will be provided with one. The online survey tool will be available to you for four weeks.

Benefits/Risks to the Participants

There is no monetary compensation for participating in the study. There may be no direct benefit to you as a participant. However, the responses provided will be valuable to the researcher, the research community around the world, ministry of Health and Child Welfare, medical school education curriculum developers, the public and other

public health stakeholders in Zimbabwe. The study will benefit in contributing to increasing knowledge about prostate cancer as a public health concern in Zimbabwe and the world around. All survey responses will be kept confidential. No names or otherwise identifying data will be collected. If you have concerns regarding the risk of participation, please contact the investigators or the Institutional Review Board at Walden University to discuss your concerns.

Costs/Payments to the Participant

There is no cost associated with participation in the study. All participation is completely voluntary. There is also no monetary compensation for participation in the study.

Confidentiality

Information obtained in this study will be kept confidential unless disclosure is required by law. All data will be secured on a password protected server for up to seven years. After seven years, data will be disposed off properly. No identifying information will be used in any portion of analysis or data reporting. Information you may provide below is only for your personal benefit in getting results of the study send directly to at your request.

Rights to withdraw from the study

- You are entering into this contract to participate solely based on your interest to be a participant.
- You return have the right to withdraw from the study at any point ads any other participant.
- You acknowledge you have read and completely understand this participation letter. You understand that participation is completely voluntary and you can withdraw from the study at any time.

If you have any questions about any aspect of the study, you can contact the researchers or IRBs at Research Council of Zimbabwe and Walden University. Completion of this questionnaire indicates consent to participate. If you want feedback from the study please fill in your information below for communication purposes only. You acknowledge that your information will not be used for any other purpose other than communicating results of the study, in which you took part as a participant voluntarily. Please keep a copy for your reference purposes.

Thank you for your time.

Appendix F: Curriculum Vitae

ADONIAH M. MUKONA [DPT, PT, MBA, Ph.D. (ABD)]

RESUME/CURRICULLUM VITAE

Objective

In pursuit of a challenging rehabilitation administrative career, encompassing rehabilitation public health issues, aimed at equitable distribution of services to underserved communities. Experienced and well qualified Doctor of Physical Therapy, interested to work within a progressive rehabilitation organization, invested in client wellness rehabilitation programs.

Why You Need Me/Who I am

Married to a Nurse Practitioner, have three children, two college students (22 & 19) and one in elementary school (10). Very flexible and dedicated to human services development in relation to health issues. Believe in the principle and philosophy of servant leadership, rooted in providing comprehensive services, wherever the service recipient resides and at their societal level. Possess a multiple education background, covering multiple social, cultural, economic diverse needs of society, and multiple clinical settings. Have a diverse management experience, in various clinical settings, and owner of a rehabilitation employment agency International Physiotherapy Associates Professional Corporation LLC. (IPAPC LLC.)

Work Experience

- Has 22 years of clinical and administrative experience in multiple work setting environments in hospitals, long term care rehabilitation centers, home health care locally and abroad.
- Currently working in long term care at Highland Manor Health Care in Indianapolis (>5 years)
- Owner and Director of International Physiotherapy Associates Professional Corporation LLC. (IPAPC LLC.)
- Rehabilitation Director Preferred Home Health Indianapolis (May –September 2013)
- Great Home Health experience at various home health agencies in and around Indianapolis (2001- Current)
- Owned a contracting Company - HCI LLC. (Director of Rehabilitation 2007-20012)

- Springfield Healthcare Center (Rehabilitation Director 2003-2007)
- Scunthorpe General Hospital-UK (Lead Orthopedic PT 1999-2000)
- Nova Care (Staff PT 1998-2000)
- Symphony Rehabilitation (Staff PT 1995 -1998) First assignment in the U.S.
- Zimbabwe Iron & Steel Company (Director of Rehabilitation Services 1988-1995)

Educational Qualifications

- PhD in Public Health (abd) student at Walden University, US (2015)
- Doctor of Physical Therapy degree from Utica College, NY (2012)
- MBA from Indiana Wesleyan University, IN (2002)
- BSc. Honors in Physiotherapy from the University of Zimbabwe, ZW (1996)
- St. Thomas Guys Hospital-London (Neurology Internship)

Professional Licenses

- Licensed in Indiana (License number: 05004874A)
- Florida
- Pennsylvania
- Illinois
- Zimbabwe
- UK

Professional Affiliations

- American Physical Therapy Associations (United States)
- Zimbabwe Physiotherapy association (Zimbabwe)
- Chartered Society of Physiotherapist (United Kingdom)

Charity Organization(s) Affiliation

- Africa University (Principal Researcher)
- Member of the Knights of Columbus
- Member International Lions Club
- Member of the Roman Catholic Church

General Interests

- Charity work
- Dancing & Exercising
- Golfing
- Gardening

References

Thomas Dobbins	Owner/Administrator of Lawrence Manor	Phone: 317 442 5555
Darleen Doss	Director of Nurses at Lawrence Manor	Phone: 317 898 1515
Patrick Hall	Owner/Administrator of Highland Manor	Phone: 317 926 0254
Ben Soliman	Professional Colleague	Phone: 317 4136279
Dumisani Mpofu	Professional Colleague	Phone: 219-313-3354
Joseph Choga	Professional Colleague	Phone: 317-513-8064

**The above references can be reached at the phone numbers provided at the time they granted me their permission to refer to them as my references. All phone numbers have been confirmed active and working.*