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# Predictors of Cervical Cancer Screening: An Application of Health Belief Model

Sedigheh Sadat Tavafian  
Tarbiat Modares University  
Iran

## 1. Introduction

Worldwide, cervical carcinoma is one of the most common gynecologic malignant tumors and a leading cause of death from genital malignancies in women. Although, pap smear as a screening method has the potential to identify pre-cancerous lesions and could massively reduce the invasive disease in developed countries, developing countries could not significantly lower the rate of cervical cancer among general population through using this screening test. This chapter will review the factors influencing cervical cancer screening behavior. First, the state of pap smear up taking - as a method of screening - among women is described. Second, the structure of Health Belief Model and how the constructs of the model could predict health behavior of cervical cancer screening will be explained. Finally, the application of Health Belief Model intervention to improve the behavior of cervical cancer screening among women will be discussed.

## 2. Pap smear as a cervical cancer screening test

Cervical cancer is the second leading cause of death worldwide and the tenth leading cause of cancer-related deaths among women in the United States (Ben-Natan, & Adir, 2009). Despite, fully preventable, cervical cancer is a major health problem in developing countries (Sankaranarayanan et al., 2008 ; Tristen et al., 1996; Abdullahi, 2009; Akbari et al., 2010). Cervical cancer is also a common type of cancer among women, especially in women 20–39 years of age. In several developed countries, the incidence of invasive cervical cancer has declined, which is largely attributed to early detection efforts. However, several subpopulations remain under screened, Active young women, minority women with language difficulties, and women with specific cultural health beliefs are at risk for this disease (Harlan et al., 1996; Snider 1996). It has been argued that the majority of cervical cancer as well as the most related deaths occur in low and medium income countries (Akbari et al., 2010). The patients who have been early diagnosed had survival rate much more than who suffering from more advanced stage of the disease. Papanicolaou or Pap smear test is a powerful cervical cytology screening test that could detect cervical cancer in premalignant stage that could be fully curable (Gakidou et al., 2008). This method of cervical cancer screening detects abnormal precancerous cells before they advance to cancer. Routine cervical cancer screening - every one to three years - is recommended by American Society for Colposcopy and Cervical Pathology to be begun in women three years after becoming

sexually active or no later than by age 21 and continue to age 65 depending on screening history . In developed countries, extensive screening program through pap smear test, has declined the incidence of cervical cancer. In contrast, in most developing countries, comprehensive cervical cancer screenings are rare. Low participation of cervical cancer screening and low follow up of screening were evidenced by studies done in low resource countries like Botswana (Ibekwe1 2010; McFarland, 2003). However, in spite of advances in screening and treatment of cervical cancer during the past several decades, this disease remain a major health problem for Hispanic women, as many women have never had a Papanicolaou smear, or were not tested regularly (Harlan et al., 1991; Matuk,1996, Salazar, 1996). It has been stated that current screening programs in developing countries or among minorities faced obstacles such as insufficient supplies, inadequate trained health care providers; limited available services and lake of patient follow up procedure. Additionally, lack of appropriate programs in these countries indicates that the population may be at relatively higher risk for cancer mortality and morbidity due to delayed diagnosis. Inappropriate allocation of funds and human resources could also be a barrier to an effective and organized screening program in developing countries. These deficiencies caused the majority of cervical cancer cases referred to health care providers with late stage disease (Were, 2011). There are many evidences from different countries to suggest that women of lower socio-economic status (SES) are less likely to participate in cancer screening than those who are more advantaged (Coughlin et al., 2006, Datta et al., 2006, Lofters et al., 2007, Ackerson 2010) . In addition, lack of enough knowledge regarding preventable cervical cancer and also socio-cultural barriers such as embarrassment for pelvic examination have been argued as leading factors of not using available screening services regularly (Sankaranarayanan, 2008). Fear of the result of the test is another socio cultural barrier among different countries. Studies with Hispanic women reported fear of cancer, embarrassment, and limited English ability as major perceived barriers. In Hispanic women, great fear of cancer was associated with extreme fatalism about the disease. Most believed that cancer cannot be cured, and a diagnosis is considered a death sentence. This fear led to the avoidance of the subject and discussion of cancer (Bakemeier et al., 1995, , Frank-Stromborg et al., 1998) As a result, educational programs were often avoided, contributing to lack of optimal knowledge of screening practices (Chavez , 1997, Mandelblatt , 1999). Embarrassment was a stronger predictor of screening than perceived susceptibility and perceived benefits of early detection in a study conducted by Richardson and colleagues (Richardson, 1987). A previous study examined the association between inadequate functional health literacy in Spanish among low-income Latinas and cervical cancer screening knowledge and behavior (Garbers & Chiasson, 2004). This study showed in compared to women with adequate and marginal health literacy, women with inadequate functional health literacy were significantly less likely to have ever had a Papanicolaou (Pap) test (odds ratio, 0.12; 95% confidence interval [CI], 0.04-0.37) or in the last three years (odds ratio, 0.35; 95% CI, 0.18-0.68) .This study verified even when controlling for other factors, women with inadequate health literacy were 16.7 times less likely to have ever had a Pap test. In 2006, American Cancer Society reported the American African women have a higher mortality rate due to cervical cancer when compared to all other groups of women. According to this report about 70 % of women diagnosed with cervical cancer had not received the Papanicolaou (Pap smear) test within the previous 5 years or had never obtained the screening test (American Cancer Society, 2006). One of the reasons for the deference in the mortality rate for American African women was that they tend to have less

frequent screenings as compared to other racial groups of women. Subsequently, this group of women experienced discrepancies in mortality rates related to cervical cancer when compared to other groups. It has been shown that individuals' beliefs about the causes and significance of a particular illness were interconnected with their healthcare seeking behaviors. Al-Neggar RA and co-workers concluded that despite adequate knowledge regarding risk factors of cervical cancer, some misconceptions and wrong beliefs among young women could be resulted in poor practice of pap smear test (Al-Neggar et al., 2010). One of theoretical models that could assess the beliefs of people regarding healthy behavior is Health Belief Model. In this section, the structure of Health Belief Model and its capability to predict the behaviors is explained. According to concepts of Health Belief Model, if individuals regard themselves as susceptible to a condition, believe that a course of action available to them would be beneficial in reducing either their susceptibility to or severity of the condition, and believe the anticipated benefit of taking action outweigh the barrier to action, they are more likely to take action so that their beliefs will reduce their risks.

### **3. Health belief model as a framework for predicting behaviors**

The Health belief model was originally developed in the 1950s by a social psychologist in the U.S public Health Service to explain the widespread failure of people to participate in programs to prevent and detect disease. Later, the model was extended to study peoples' responses to symptoms and their behaviors in response to diagnosed illness, specially adherence to medical regimens (Glanz et al., 2008). This model aims to explain preventive health behaviors rather than behaviors in time of illness (Ben-Natan & Adir, 2009). Major health behaviors emphasized by the Health Belief Model focus on prevention exposure of diseases at their asymptomatic stage (Lee, 2000). The Health Belief Model contains several primary concepts that predict why people will take action to prevent, to screen for, or to control disease conditions. Thus, this model assumes that health behaviors are motivated by five elements of perceived susceptibility, perceived seriousness, perceived benefits and perceived barriers to behavior, cues to action and most recently factor of perceived self efficacy (Champion & Skinner, 2008).

#### **3.1 Application of the Health Belief Model to cervical cancer screening behavior**

The Health Belief Model has been used extensively to determine relationship between health beliefs and health behaviors as well as to inform interventions. In this section, the constructs of Health Belief Model is explained at the first and then the application of Health Belief Model constructs in the area of cervical cancer screening behavior is discussed.

##### **3.1.1 Perceived susceptibility**

The perceived susceptibility refers to beliefs about the likelihood of getting a disease or condition. Perceived risk of contracting a disease refers to individuals' subjective perception of their susceptibility to the disease. For example, women must believe there is a possibility of getting cervical cancer before they will be interested in uptaking Pap smear. The health belief model predicts that women will be more likely to adhere the cervical cancer screening recommendation if they feel that they are susceptible to cervical cancer (Glanz et al., 2008). Previous study has shown that individuals who believed they had risk factors for cervical

cancer, were more likely to take action to prevent an adverse outcome subsequent to getting the disease (Saslow et al., 2002). Perception of not being at risk for cervical cancer has been verified as a reason for not obtaining pap smear test in previous studies (Mutya et al, 2006; Basu et al, 2006, Winkler et al, 2008 , Ibekwe1, 2010). A common emerging belief to cervical cancer screening in Hispanic women is that it is unnecessary or not needed to prevent cervical cancer. Among this target group a substantial proportion of women perceived Papanicolaou smears as unnecessary diagnostic procedures, rather than preventive health measures. In a study (Stein & Fox , 1990) showed Hispanic women do not view preventive health, such as cancer prevention, as a priority; as a result, they have an increased risk for diseases because of their curative rather than preventive health practices. In this regard, Hispanic women do not perceive their own vulnerability to cervical cancer and do not see themselves at risk.

### 3.1.2 Perceived severity

The perceived severity of a disease refers to the severity of a health problem as assessed by the individual. This variable refers to feeling about the seriousness of contracting an illness or of leaving it untreated include evaluations of medical/ clinical consequences like death, disability and pain or social consequences such as effects of the conditions on work, family life and social relations. For example, if women think that cervical cancer is a severe disease and believe that getting cervical cancer would have serious medical, social and economical consequences for them, it is more likely to obtain cervical cancer screening test. Having personal knowledge regarding the importance of the Pap smear has been evidenced as an important factor to take action to prevent the adverse outcome of cervical cancer (Saslow et al., 2002). A survey on the severity of cervical cancer among adult females in Quebec, found that 57% of women were afraid of developing cervical cancer sometime in their life, and 93% thought cervical cancer has serious consequences. Cervical cancer related anxiety and perceived seriousness did not vary by age group or level of education (Sauvageau et al., 2007). Although most participants perceived cervical cancer as serious, the thought of believing that there was no treatment of cervical cancer, makes them uninterested to doing cervical cancer screening test (Ibekwe1, 2010) . However, Hoque and coworkers, compared two groups of ever screened and never screened for cervical cancer. In a cross sectional study. in this evaluation, it was observed that both groups equally believed that there is effective treatments for cervical cancer, and that cervical cancer makes a woman's life difficult. Both the screened and the never screened believed that cervical cancer is as serious as other cancers; that it causes infertility and that death from cervical cancer is not rare. This study showed no significant association between perceived severity and screening for cervical cancer that differs with the hypothesis of the Health belief model that predicts perceived seriousness of a disease necessitate people to engage in preventive actions. Further research should be done to explore the reasons why at risk women fail to participate in cervical cancer screening (Hoque, 2009).

### 3.1.3 Perceived benefits

Even if a person perceives personal susceptibility to a serious health condition (perceived treat) , whether this perception leads to behavior change will be influenced by the person 's belief regarding the perceived benefits of the various available actions for reducing the



Application	Definition	Concept
Define population(s) at risk, risk levels Personalize risk based on a person's characteristics or behavior	Belief about the Chances of experiencing a risk or getting a condition or disease	Perceived Susceptibility
Specify consequences of risks and conditions	Belief about how serious a condition and its sequel are	Perceived Severity
Define action to take; how where, when; Clarify the positive effects to be expected	Beliefs in efficacy of the advised action to reduce risk or seriousness of impact	Perceived benefits
Identify and reduce perceived barriers through reassurance, correction of misinformation, incentives, assistance	Belief about the tangible and psychological costs of the advised action	Perceived barriers
Provide how-to information, promote awareness, Use appropriate reminder systems	Strategies to activate "readiness"	Cues to action
Provide training and guidance in performing recommended action. Use progressive goal setting Give verbal reinforcement. Demonstrate desired behaviors. Reduce anxiety	Confidence in one's ability to take action	Self efficacy

Table 1. Description of HEALTH BELIEF MODEL constructs.

disease treat (Glanz et al., 2008 ). For example, women must believe that a course of preventive behaviors available would be beneficial in reducing the risk of getting cervical cancer. Therefore, individuals exhibiting optimal beliefs in susceptibility and severity are not expected to accept any recommended health action unless they also perceive the action as potentially beneficial by reducing the treat. Ibekwe1 explored that either screened or never screened research participants overwhelmingly agree or strongly agree that it is important to do cervical cancer screening (Ibekwe1, 2010). This is consistent with studies in which the majority of subjects agreed that regular pap smear screening will give them peace of mind, find a problem before they become cancer and very necessary even if there is no family history of cancer (Leyva et al., 2006). The major reasons while both screeners and never screeners in Ibekwe1 study believed was that it is important to do cervical cancer screen because it could find changes in the cervix before they get cancer and the disease could easily be cured when found early. These reasons are consistent with findings of other studies (Agurto et al., 2004 ; Ibekwe1, 2010). As it was discussed before, Health belief model predicts that those with perceived benefits are more likely to take preventive actions, than those with no perceived benefits or low perceived benefits. Thus, it is most likely that the low uptake of cervical cancer screening among the participants took part in Ibekwe1 study could be attributed to other factors other than lack of perceived benefits (Ibekwe1, 2010). When in Ibekwe1 study participants and non-participants in cervical cancer screening were

compared, it was found that there was no significant association between perceived benefits of doing cervical cancer screening and cervical cancer screening, and this was consistent with previous studies (Agurto et al., 2004; Leyva et al., 2006). The study did not find any significant association between socio-demographic characteristics and perceived benefits of doing cervical cancer screening as both the ever screened and the never screened irrespective of their socio-demographic characteristics overwhelmingly agree or strongly agree that it was important to do cervical cancer screening. (Ibekwe1, 2010). This finding is consistent with findings of other studies in which participants across all socio-demographic characteristics generally were aware of the benefits of cervical cancer screening (Leyva et al., 2006). However, continue education to clear misconceptions are still required to ensure increased uptake of cervical cancer screening among the eligible women especially among those that are high risk (Ibekwe1, 2010).

### 3.1.4 Perceived barriers

Perceived barriers to action refers to the negative aspects of health-oriented actions or which serve as barriers to action and/or that arouse conflicting incentives to avoid action. Perceived barrier refers to the potential negative aspects of particular health action may act as impediments to undertaking recommended behaviors. A kind of nonconscious, cost effective analysis occurs wherein individuals weight the action expected benefits with perceived barriers such as it could help me, but it may be expensive, have negative side effects, and be unpleasant, inconvenient or time consuming. Thus combined levels of susceptibility and severity provide the energy of force to act and the perception of benefits (minus barrier) provide a proffered path of action (Glanz et al., 2008). For example, if women believe that anticipated benefit of doing behaviors to prevent cervical cancer outweigh the barriers to or cost of the preventive behaviors, they are more probably to obtain cervical cancer screening test. Previous researchers also have reported that women who perceived the Pap smear testing process as painful and embarrassing due to visiting by male provider had lower rates of routine cervical cancer screening (Boyer et al., 2001; Hoyo et al., 2005; Jennings, 1997, Ackerson K, 2010, Abdullahi 2009). In this study, Some participants from the focus groups and interviews mentioned off-putting experiences that they had experienced themselves or heard from others acting as a barrier to attending screening. Such negative experiences included experiencing pain, bleeding and being faced with inexperienced sample takers who did not explain the process or enable them to ask questions (Abdullahi 2009). In this study, language difficulties were thought to not only detract from women's understanding of the test and thus the perceived need for screening, but also to prevent some women from attending, due to anxiety about not being able to understand the sample taker or not being able to ask questions and form a trusting relationship. Even if the participants took part in the study appreciated the need for screening, fear of the test was cited as a hindrance to some women, Furthermore, the metal speculum was perceived as a painful instrument and some did not trust the sterilization process. Fear of the test results was also thought to prevent some women from coming forward for screening. (Abdullahi 2009). Fear that abnormal test results mean existing cancer has been reported as a barrier to do Pap smear in previous researches (Mutuyaba et al, 2006; Basu et al, 2006; Winkler et al., 2008, Were E1, 2011). The other factors that appeared to cause negative perceptions and act as barriers to cervical cancer screening was a previous history of trauma like childhood sexual abuse, intimate partner violence, and trauma related

to medical procedures which was mentioned in previous study( Ackerson K , 2010). However, in previous research, a link between an interpersonal or medical trauma history and routine screening was not indicated (Bazargan et al., 2004; Hoyo et al., 2005). Chung HH conducted a cross sectional study to document currently cervical cancer screening practices of physicians in Korea These researchers verified that cost has been a major reason for selecting screening method of liquid-based cytology instead of Pap smear (Chung, 2006). Obesity was reported as a barrier for cervical cancer screening in previous study(Wee, 2002). In this study. it was shown that overweight and obese women were less likely to be screened for cervical cancer with Pap smears, even after adjustment for other known barriers. In a study was conducted in 1998, it was revealed that among women who sought outpatient care, screening rates decreased while co - morbidity/chronic disease increased (Kiefe, 1998). Embarrassment is known to be a barrier to cervical screening, regardless of ethnic background, but in the study conducted among some Somali women, there was additional embarrassment associated with the potential reaction of the sample taker when faced with a circumcised woman. The anxiety of potentially being faced with a male sample taker was a significant problem for these Muslim women (Abdullahi, 2009, Naish, 1994, Nichols, 1987). Time consuming was a barrier to cancer prevention in previous syudy. A study addressed the house staff adherence to cervical cancer screening recommendations by United States Preventive Services Task Force, reported lack of time during postgraduate training was frequently reported as a barrier to obtaining preventive care( Ross et al, 2006). Low socioeconomic status, poverty, low levels of education, lack of knowledge, and acculturation have been established as reasons for the low screening rates in Hispanic women. Cost of cytology have been cited as problems for Hispanic women in the United States (Austin et al, 2002). Many Hispanic women strongly believed that the fear of finding cancer would deter them from screening (Salazar MK. , 1996). Several studies reported that many Hispanic women would prefer not to know the diagnosis of cervical cancer (Hubbell et al., 1996; Mandelblatt , 1999 ). Suarez and associates (Suarez , 1993) noted that 48% of the Mexican-American women they surveyed thought that their chances of surviving cervical cancer were poor and those who preferred to speak in Spanish tended to have more fatalistic attitudes. They often believed that there was nothing one could do to prevent cervical cancer. This powerlessness may account for some of the anxiety associated with cancer. According previous evidences, a major barrier to cancer screening was culturally based embarrassment and similar emotions ( Coyne , 1992, Bakemeier et al., 1995, Stein , 1990). The inability to speak English fluently interferes with Hispanic women's ability to obtain important health information and to communicate with health professionals. Women speaking only, or mostly, Spanish were consistently less likely to be screened for breast and cervical cancer. Language difficulties can deter referral and impede delivery of medical care (Harlan , et al1991).

### 3.1.5 Cues to action

Various early information of the Health Belief Model included the concept of cues that can trigger actions. Readiness to action (Perceived susceptibility and perceived benefits) could only be potentiated by other factors particularly by cues to instigate action such as bodily events or by environmental events such as media publicity (Glanz et al., 2008). For example, women would be more likely to have preventive behavior like uptaking Pap smear if they be reminded by their family members or heath care providers. The influence of cues on



women to practice cervical cancer screening behavior has been reported by previous evidences. Ackerson has investigated the role of cues for obtaining pap smear test and resulted that health care providers were influential cues for studied participants by giving information regarding the importance of the test ( Ackerson K , 2010). Furthermore, the Pap smear users in Ackerson study were more encouraged by health care providers and family members to do the test compared to other individuals who did not obtain the test. In the country of Australia, health care system is a good cues for women to obtain cervical cancer screening .In this country all people accessing high quality cancer control, whether it be prevention, screening, treatment or education. In addition, non-government organizations (NGOs) specializing in cancer control have been providing free or highly subsidized support services to patients and their families for over half a century in most states. These NGOs have also been very active in public education about cancer, especially cancer prevention and act as cues for women (Burton, 2002). In previous research recommendation by GPs and health care providers as well as written and oral information were considered as cues to action for cervical cancer screening (Abdullahi 2009). According to this study, many participants had first attended screening as a result of their GP's advice so that GPs were proactive in encouraging Somali women to take up screening. Regarding preferred formats of screening information, Somalian participants stated that it was necessary for information to be given in Somali language. They explained that, in view of the cultural significance of talking in this culture, they responded better to verbal than written information, such as being told by a friend or a Somali community worker through talks or workshops in community settings. Written information was considered unsuitable cues to action by some due to low levels of literacy among Somalis, although others felt that it was a useful adjunct (Abdullahi 2009). The integral role of nurses in educating women regarding health preventive care, especially the importance of routine cervical cancer screening was stressed in other study(Ackerson, 2010). This study confirmed nurses are in a position to influence positive health behavior, so they should inform women about the purpose of the Pap smear test, while assessing the woman's personal risk factors for cervical cancer, and her beliefs and perceptions regarding Pap smears. Many studies have identified positive cues to cancer screening in Hispanic women. These include physician recommendation, lay health workers, written materials, and media. Physician recommendation is one of the most important cues to cancer screening. Physicians play a key role in informing women of the benefits of screening (O'Malley , 2001) . Similar results were observed in previous evidence (Zambrana et al , 1999). The respect for authority is an important characteristic of Hispanic culture. Latinas consider doctors as powerful authority figures and have a tendency to listen to what doctors say, but rarely show self-initiated health care behaviors. The role of physician is especially important for older minority women ( Rimer , 1994, Mandelblatt & Yabroff , 2000). Community outreach strategies are the most common health promotion, and probably most effective strategies employed by health care workers, researchers, and health promotion officers. Community outreach strategies include the use of appropriate language materials, involvement of lay health workers, and presentations at community and workplace settings. Lay health workers are trained personnel from the Hispanic community whose main job is to educate women on the benefits of Papanicolaou screening and mammography to reduce perceived barriers to screening. Several studies report that the involvement of the community is effective in the development, planning, and delivery of the screening programs (Eng et al., 1997, Zavertrnik, 1993). Impressive results in cervical and breast screening behaviors were obtained in the Hispanic community living in California

(Perez-Stable, 1992). In Ontario, lay health workers have been found to be important positive cues to action for Hispanic women. Churches are also important vehicles to reach Hispanic women. Castro et al, reported positive church involvement in cancer screening practices of Latina women (Castro, 1995). Other researchers have found that churches provide a social influence to participation in cancer screening among Hispanic women (Frank-Stromborg, 1998, Zavertrnik, 1993, Davis, 1994). The "Companeros en la Salud" program delivers educational programs at churches, and preliminary results are expected to show an increase in Papanicolaou smears and mammography among Latina women. Written materials are also used as cues to action. Specific educational materials (e.g., brochures, community newspapers), usually apart from community outreach programs, are effective in providing information to Hispanics if they are culturally sensitive, and written in Spanish at a grade (Snider et al., 1996) reading level to improve understanding among low-literacy individuals. One effective way to reach Hispanic women may be through media-based public health campaigns. However, such programs are effective only when delivered and implemented in a culturally meaningful and sensitive manner. Vellozzi et al. indicated that Hispanic women may be more receptive to media messages than are other ethnic groups (Vellozzi, 1996). In "A Su Salud" program, media messages (TV, radio, and newspaper) have been integrated successfully with community-based outreach (Suarez, 1993b, Anderson et al., 2009). Salazar indicated that the media increased Hispanic women's willingness to openly discuss breast cancer (Salazar, 1996).

### 3.1.6 Perceived self efficacy

Perceived self efficacy is defined as the conviction that one can successfully execute the behavior required to produce the outcomes. For behavior change to succeed, people must feel threatened by their current behavioral pattern (perceived susceptibility and severity) and believe that change of a specific kind will result in a valued outcome at an acceptable cost (perceived benefit). Then, they also must feel themselves competent (self-efficacious) to overcome perceived barriers to take actions. For example, women should be confident that they could uptake pop smear in a regular manner.

### 3.1.7 Other variables

Divers demographic, sociopsychological, knowledge, socio cultural, race, education and structural variables may influence perception and thus, indirectly affect on health related behavior (Glanze 2008). For example, socio demographic factors, particularly educational attainment, are believed to have an indirect effect on behavior of cervical cancer screening, through influencing the perception of susceptibility to getting the disease, severity of the disease and benefits of this screen behavior that overcome to the perceived barriers. Studies conducted among divers samples have found some differences in the specific types of beliefs about susceptibility, benefits and barriers among different racial and ethnic groups. Different groups have different beliefs about the causes of cervical cancer, which can affect perceived susceptibility. Hispanic women were afraid that they would not be able to cope with the disease. One research group noted that low-acculturated Mexican-American women expressed a stronger fear of cancer than did high-acculturated women (Balcazar, 1995). A study conducted in somali showed that knowledge about the purpose of cervical screening was limited among Somali women. There was also a lack of understanding of risk

factors for cervical cancer, and many of the women held fatalistic attitudes, associated with the idea of 'God's will', about this cancer and other aspects of health. Somalis are almost all Muslim and their view of health is typically shaped by a combination of traditional Somali and Islamic beliefs, with most believing that illness and healing only occur by the will of God. It is important therefore to recognize that some Somalis may wrongly interpret Islam as not allowing disease prevention interventions (Abduullahi 2009). Researchers have found that Latinas hold more fatalistic attitudes about cervical cancer (Chavez, 1997). This attitude stemmed from the belief that there was little an individual could do to alter fate or prevent cancer. Latinas often believed that cancer is God's punishment for improper or immoral behavior (Hubbell FA, 1996). Another culturally specific barrier was embarrassment associated with female circumcision, i.e. female genital mutilation. Embarrassment about discussion of private body parts and embarrassment at exposing private body parts during a physical examination may pose a barrier for some Hispanics, especially if examined by a male physician (Frank-Stromborg et al., 1998). Accordingly, gender of the physician may determine breast and cervical cancer screening uptake and compliance in this community. Hispanic women may also be embarrassed to disclose personal information related to their sexual activity to another person besides their partner. Limited proficiency in the language of the host country has also been identified as a barrier to cancer screening. This variable has been shown to provide a reliable prediction of the use of preventive health care among minority women (Stein & Fox, 1990). The other culturally barrier that was consistently mentioned by the participants who took part in the focus groups and interviewees from Somali was embarrassment as a hindrance to attending screening. Most of these women viewed the test as intrusive and uncomfortable, both physically and emotionally. For some, the embarrassment associated with having been circumcised was an additional barrier. Although they were not ashamed of this, they anticipated embarrassment associated with the shocked reaction of the sample taker to their circumcision. In all of the focus group discussions and six of the eight interviews, participants explained that for Muslim women, the possibility of having a man perform the test was a significant barrier. Many participants were unaware that they could request a woman to undertake the test (Abdullahi 2009). Other variables suggested by the participants were: lack of knowledge about the need for cervical screening, practical problems such as appointment times and childcare needs, language difficulties, fear of the test and negative past experiences. Determinants of uptake of cervical cancer screening services include age, education, contraception use and being married (Objechina, 2009). Women with low educational achievement, low awareness of the risk factors for cervical cancer, and who do not have support from their husbands may also have poor uptake of screening services (Allahverdipour H, 2008; Abdullahi, 2009). In previous study which was conducted by Ackerson K, twenty-four participants were divided into two groups based on whether they did or did not get routine Pap smears. The results showed there were differences between the two groups in terms of demographic and social characteristics, having previous health care experience as well as cognitive appraisal related to beliefs and perceptions of vulnerability (Ackerson K, 2010). Monthly income and residential area were significantly associated with perceived severity (Houqe 2009). Certain types of barriers are more or less important for particular cultural or ethnic subgroups. Thus, women who had such belief might consider their susceptibility to cervical cancer was quite low. In a systematic review was conducted by Johnson CE in 2008, commonly held beliefs across several cultural groups emerged included fatalistic attitudes, a lack of knowledge about cervical cancer, fear of Pap smears threatening one's virginity, as well as beliefs that a

Pap smear is unnecessary unless one is ill (Johnson CE, 2008). This study revealed that some unique beliefs were common among specific cultural groups. For example, Hispanic women noted some body-focused notions and believed that childbirth, menses, sex, and stress play a role in one's susceptibility to cervical cancer. African Americans identified administrative processes in establishing health care as barriers to screening, whereas Asian immigrants held a variety of misconceptions concerning one's susceptibility to cancer as well as stigmatization imposed by their own community and providers. This study concluded health care providers and policy makers must be cognizant of the various sociocultural factors influencing health-related beliefs and health care utilization among immigrant and ethnic minorities in the United States. Culturally relevant screening strategies and programs that address these socio cultural factors must be developed to address the growing disparity in cervical cancer burden among underserved, resource-poor populations in the United States . Vietnamese American women are five times more likely to be diagnosed with cervical cancer than their White counterparts. Previous research has demonstrated low levels of Papanicolaou (Pap) testing among Vietnamese. Taylor VM and co-workers conducted a population-based, in-person survey of Vietnamese women aged 18 - 64 years to examine factors associated with interval Pap testing adherence. In this study the beliefs including Pap tests decrease the risk of cervical cancer , cervical cancer is curable if detected early, testing is necessary for women who are asymptomatic, sexually inactive, or postmenopausal , concern about pain/discomfort as a barrier to screening; family member(s) and friend(s) had suggested testing (social support); doctor(s) had recommended testing communication with health care providers were explored as predictor variables for obtaining pap smear (Taylor VM, 2004). In a multivariate analysis, this study showed being married, knowing Pap testing is necessary for asymptomatic women, doctor(s) had recommended testing, and had asked doctor(s) for testing were independently associated with screening participation (Taylor et al., 2004) . Fear, embarrassment, and cost were more likely to be barrier to adherence cervical cancer screening recommendation among Asian women compared to white women ( Ross, 2008). Finally, in addition to differences in specific perceptions about susceptibility, benefits and barriers among different racial or ethnic groups, researchers have found differences by race in exploratory of Health Belief Model constructs. Racial and ethnic disparities in cervical cancer screening have been attributed to socioeconomic, insurance, and cultural differences. A previous study evaluated the relationship between U.S. citizenship status and the receipt of Pap smears among immigrant women in this study California Citizen immigrants were significantly more likely to report receiving a Pap smear ever (adjusted prevalence ratio [aPR], 1.05; 95% confidence interval [CI], 1.01 to 1.08), a recent Pap smear (aPR, 1.07; 95% CI, 1.03 to 1.11) as compared to immigrants who are not U.S. citizens (DE Alba, 2005).. Also variables like income, having a usual source care, and having health insurance were associated with receiving cancer screening. This study showed Hispanic women were more likely to receive Pap smears as compared to whites and Asians (DE Alba, 2005). Foreign birthplace may explain some disparities previously attributed to race or ethnicity, and is an important barrier to cancer screening, even after adjustment for other factors. Increasing access to health care may improve disparities among foreign-born persons to some degree. Results from previous research, showed black respondents were as or more likely to report cancer screening than white respondents; however, Hispanic and Asian-American and Pacific Islander (AAPI) respondents were significantly less likely to report screening for most cancers. When race/ethnicity and birthplace were considered together, U.S.-born Hispanic



and AAPI respondents were as likely to report cancer screening as U.S.-born whites; however, foreign-born white (adjusted odds ratio [AOR], 0.58; 95% confidence interval [CI], 0.41 to 0.82), Hispanic (AOR, 0.65; 95% CI, 0.53 to 0.79), and AAPI respondents (AOR, 0.28; 95% CI, 0.19 to 0.39) were less likely than U.S.-born whites to report Pap smears (Goel et al., 2003). A cross-sectional survey that was conducted among a convenience sample of 204 female post-graduate physicians examined adherence to United States Preventive Services Task Force cervical cancer screening recommendations, perception of adherence to recommendations, and barriers to obtaining care. This study showed just 83% of women were adherent to screening recommendations and 84% accurately perceived adherence or non-adherence. Women who self-identified as Asian were significantly less adherent when compared with women who self-identified as white (69% vs. 87%; Relative Risk [RR]=0.79, 95% Confidence Interval [CI], 0.64-0.97;  $P<0.01$ ). Women who self-identified as East Indian were significantly less likely to accurately perceive adherence or non-adherence when compared to women who self-identified as white (64% vs. 88%; RR=0.73, 95% CI, 0.49-1.09,  $P=0.04$ ). Women who self-identified as Asian were significantly more likely to report any barrier to obtaining care when compared with women who self-identified as white (60% vs. 35%; RR=1.75, 95% CI, 1.24-2.47;  $P=0.001$ ). Women who self-identified as East Indian being more likely to report any barrier to obtaining care when compared with women who self-identified as white (60% vs. 34%; RR=1.74, 95% CI, 1.06-2.83;  $P=0.06$ ) (Ross et al., 2008). A systematic review was conducted in 2008 showed most consistent associations between obesity and cervical cancer screening behavior. According to this review, most studies reported an inverse relation between decreased cervical cancer screening and increasing body size, and several studies reported that the association was more consistent among white women than among black women (Cohen et al., 2008). Participants from the focus groups and interviews in Abdullah study 2009 tended to discuss what they thought were other Somali women's reasons for not attending screening rather than the reason for their own non attendance. This study highlighted that 38% of participants had never been screened. Of these, when probed, four women said that they had never even heard of the screening test, eight said that they had never been sexual active and so thought that they did not need to attend for screening, and seven cited other reasons, including lack of understanding of the need to attend screening, hearing others' negative stories about the test, lack of knowledge and embarrassment. Participants within all focus groups and in the interviews identified that many Somali women had poor understanding of the need for cervical screening, and that this prevented them from attending screening. There is no cervical screening program in Somalia and the concept of preventative health was thought to be unfamiliar to many Somalis, especially to those new to the UK (Abdullahi 2009).

#### **4. Cervical cancer screening behavior intervention based on Health Belief Model**

A number of cervical cancer screening behavior promotion interventions have addressed at least one Health Belief Model construct - usually perceived barriers - and have had significant effects on cervical cancer screening behavior outcomes. This model, which emerged in the late 1950s, was used as an exploratory model to assess why people did not use preventive health services and eventually to understand why people use or fail to use health services. Many researchers now employ this model to guide the development of



health interventions with the aim of changing behaviors. Here, the findings from several different types of interventions based on Health Belief Model are summarized. Perhaps because constructs in the Health Belief Model are fairly intuitive, they have been used in a number of community based interventions conducted among underserved groups with lower socio economic level. The development of efficacious theory-based, culturally relevant interventions to promote cervical cancer prevention among underserved populations is crucial to the elimination of cancer disparities. In a study by Scarinci and co-workers a theory-based, culturally relevant interventions used to promote cervical cancer prevention among underserved populations of Latina immigrants (Scarinci, 2011). The goal was to describe the development of a theory-based, culturally relevant intervention focusing on primary (sexual risk reduction) and secondary (Pap smear) prevention of cervical cancer among Latina immigrants using intervention mapping (IM). Health belief model provided theoretical guidance for the intervention development and implementation. IM provides a logical five-step framework in intervention development: delineating proximal program objectives, selecting theory-based intervention methods and strategies, developing a program plan, planning for adoption in implementation, and creating evaluation plans and instruments. We first conducted an extensive literature review and qualitatively examined the sociocultural factors associated with primary and secondary prevention of cervical cancer. We then proceeded to quantitatively validate the qualitative findings, which led to development matrices linking the theoretical constructs with intervention objectives and strategies as well as evaluation. IM was a helpful tool in the development of a theory-based, culturally relevant intervention addressing primary and secondary prevention among Latina immigrants (Scarinci,2011). To address the barrier of negative experience, in a qualitative study was performed in Somali, it was suggested that providing an explanation of the procedure prior to the test and allowing adequate time for questions could help to overcome negative past experiences. Some participants in focus group believed that attending as part of a group with a Somali-speaking community worker would make the experience less daunting, especially for first-time attendees. It was suggested by two participants in different groups and one interviewee that the fear of pain and poor hygiene could be helped by the provision of disposable plastic speculums, which were considered less aggressive and more hygienic (Abdullahi 2009). Beach and others in 2007 revealed in their study that the language could be as one potentially key factor in cancer screening disparities. They carried out secondary analyses of data from a randomized clinical trial that aimed to increase breast, cervical, and colorectal cancer screenings. The randomized clinical trial tested whether the intervention by Prevention Care Manager (PCM) which provided language-appropriate telephone support to help patients overcome barriers to cancer screening, was effective in helping women become up-to-date on these screening tests. Up-to-date status was based on recommendations of the U.S. Preventive Services Task Force. The intervention improved women's up-to-date status on all three screening tests, as reported elsewhere. This study included Spanish-speaking women seemed to benefit more than did English-speaking women from a bilingual telephone support intervention aimed at increasing cancer screening rates. (Beach et al, 2007). Some studies have compared the effectiveness of different media for delivering intervention addressing Health Belief Model constructs to women in clinic setting. Just as the Health Belief Model has guided community based interventions to deliver information or persuasive message to change perception and reduce barriers to cervical cancer screening behavior, it has guided interventions delivered

through television campaign. To encourage the right women to attend for cervical cancer screening, a media campaign program was developed and tested. In addition to drawing on findings from the published literature to assist campaign development, in-depth telephone interviews were conducted with 32 women aged from 30 to 69 who had previously had regular Pap tests, but had lapsed in their cervical screening for at least 3 years, to determine the barriers to returning for another test. There were three salient reasons for lapsing. A major factor was that women expressed a negative emotional disposition to Pap tests, indicating dislike, embarrassment, discomfort or anxiety about having the test. Second, for some women, Pap tests were not considered a high priority, in that they did not believe they were at risk of cervical cancer. Finally, a small group of women believed that they did not need a Pap test because they considered they would know if something was wrong with their own bodies. It was noted that lack of knowledge of the appropriate time interval between tests was not a barrier for these women, since they were aware that they were overdue for a Pap test. The findings from the interviews were used to develop a brief for an advertising agency to develop concepts for further testing with women. The brief Targeted cervical screening media campaign focused particularly on the importance of overcoming emotional barriers to having a Pap test. Ultimately, two rounds of focus groups were conducted (nine groups of women aged >40, some adequately screened and some lapsed screeners) to develop the final advertisement. A 30-s television advertisement was produced, with a 15-s cut-down version. A radio advertisement was also developed, but is not discussed in this paper, as very few women heard the radio advertisement without also being exposed to the television advertisement. The television advertisement aimed to acknowledge women's anxiety and discomfort about having the test, while reminding them there was a good reason for having one. However, it was also designed not to arouse concern for those women whose tests were up-to-date. The advertisement -Don't just sit there- featured a series of women's legs in a variety of situations and a voice-over acknowledging that although having a Pap test can be uncomfortable, being treated for cervical cancer can be far more uncomfortable. The voice-over concluded by saying If you haven't had a Pap test in the last two years, stop putting it off. Make an appointment today with your doctor or community health centre. The tag line of the advertisement on the screen indicated \_Pap tests. Every two years. It could save your life.\_ The advertisement was broadcast for nearly 4 weeks from Sunday 18 July to Thursday 12 August 2004. The media-buying schedule indicated that during this time, the advertisement had the opportunity to be seen two or more times by 86% of women in the target age range and 73% would have had an opportunity to see it three or more times. Data were conducted at the last week of the media campaign. Numbers were randomly selected from the electronic telephone directory and trained female interviewers asked to speak to the woman in the household aged between 25 and 65 whose birthday was next. Contact was made with 3510 households and in 1600 of these someone was identified as being eligible to complete the survey. Overall, an interview was obtained in 63% of homes where someone had been identified as eligible. Among them, 1000 women completed the survey and 600 did not (433 refused, 114 terminated during the interview, 53 agreed to complete it later but did not). Women were told that the research was being conducted on behalf of a well known Victorian health organization, was for public health research purposes and had been approved by an ethics committee. Up to five attempts were made to reach each of the selected numbers. While collecting data, the advertisement was then described to the women who either did not

recall a Pap screening advertisement at all or were unable to describe it accurately. A further 393 (51.8% of those asked, 42.0% of the total sample) remembered it when prompted. Thus, overall 61% of the women surveyed were aware of the television advertisement (19% unprompted recall and 42% prompted recall). Most of the 568 women who had seen the advertisement could describe its main message. About half (54.2%) reported a general message of everyone needing a Pap test, some saying that it should be regular but without specifying what regular meant, and some that it should be two-yearly. Some women (20.5%) indicated a more specific response that acknowledged that Pap tests are uncomfortable but still important to have and 9.7% reported a general message about prevention being important. Only 3.5% reported that the message was that Pap tests are unpleasant without adding the key point that they are worth having anyway. When asked what action they planned to take in response to seeing the advertising, 51.9% of women indicated that they would not do anything. However, women were most likely to respond in this way if their last Pap test had been more recent. Women who were overdue or lapsed screeners were less likely not to plan to take action. Overall, 15.9% of women indicated that as a result of seeing the advertisement, they planned to have a Pap test soon. Women overdue for a Pap test were significantly more likely to respond in this way than those who had a Pap test more recently. In total, 18.4% of women indicated they planned to have a Pap test when it was due, with no differences according to how long it had been since their last Pap test (Mullins, 2008). Mass media campaigns have been used with some success to improve participation in health screening. A meta-analysis of media health campaigns found that campaigns promoting mammography and cervical cancer screening caused 4% of women changed their behavior in response to a televised marketing campaign prompting these types of screening for women (Snyder, 2004). Several studies have used Health Belief Model variables to tailor cervical cancer screening behavior for particular recipients. In general, tailoring messages for cervical cancer screening behavior using Health Belief Model constructs have been found to increase cervical cancer screening behavior. In this study, Forsyth County Cancer Screening (FoCaS) was designed to improve beliefs, attitudes, and screening behaviors of women age 40 and older who resided in low-income housing communities. To develop effective interventions, results from the baseline women's survey, the health care provider survey, additional focus groups, and input from the Community Advisory Board were used. These sources provided information on barriers, attitudes, current breast and cervical cancer screening practices, and optimum strategies for delivering health education messages. The theoretical framework for the community-based interventions included the PRECEDE/PROCEED model for planning, the health belief model, for identifying and addressing barriers, social learning theory in terms of using lay health educators to deliver education messages and develop a sense of self-efficacy in the women, and the PENIII model, which incorporates cultural appropriateness and sensitivity in program development. Interventions implemented in the housing communities in Winston-Salem during the 2-year intervention period included: (a) "Women's Fest," a free party held in the community that included food, educational classes, cholesterol, blood pressure and diabetes screening, prizes, and information booths; (b) a church program that included a ministers' luncheon and a lay health educator program, "Taking Care of our Sisters," for female church members; (c) educational brochures especially designed to address identified barriers such as "Where to Get a Mammogram"; (d) mass media techniques (public bus ads, newspaper and radio ads on African-American media); (e)

monthly classes in each housing community conducted by a lay health educator; (f) birthday cards with the FoCaS logo; (g) targeted mailings and door knob hangers with invitations to events; and (h) one-on-one educational sessions in women's homes. Clinic-focused interventions implemented at RHC were designed to address provider, system, and patient barriers to conducting breast and cervical cancer screening and included: (a) in-service and primary care conference training for providers on issues including clinical breast exam proficiency, cultural sensitivity, and techniques to integrate prevention in primary care; (b) visual prompts in the exam rooms, e.g., "Have you screened today?"; (c) educational games, e.g., "Find the Lump Game" to teach clinical breast exam techniques; (d) an abnormal test protocol that included alert stickers, a referral process for managing the care of women with abnormal test results, and a tracking system; (e) poster and literature distribution in the waiting rooms; and (f) one-on-one counseling sessions and personalized letters for follow-up testing for women who had abnormal test results. The delivery of the intervention components was monitored by the project manager through weekly reports, observations of classes, and process evaluation measures such as attendance rolls, number of classes taught, brochures distributed, and letters mailed. Results of this study showed the proportion of women who received a Pap smear within the last 3 years increased in the intervention city from 73 to 87%. The proportion of women reporting a Pap smear in the last 3 years in the comparison city decreased over time, from 67 to 60%. Thus, the Pap smear usage rate increased by 14 percentage points in the intervention city and decreased by 7 percentage points in the comparison city for an overall net change of 21 percentage points in favor of the intervention city ( $P = 0.004$ , unadjusted Wald  $\times 2$  test). Older women (65 and over) were less likely than younger women to have had a Pap smear within guidelines (70 versus 78%;  $P = 0.013$ ). Women who received regular examinations were more likely to have had a Pap smear within guidelines (79 versus 51%;  $P = 0.001$ ). The more correct knowledge women had, the more likely they were to be within screening guidelines ( $P = 0.001$ ), and women who reported a higher number of barriers were less likely to be compliant with guidelines ( $P = 0.005$ ) than those reporting the least number of barriers. In the comparison city, married women were more likely than non married women (including divorced, separated, widowed, and never married) to be within guidelines (79 versus 60%). For Pap smears, significantly more women in the intervention city reported no barriers to screening at follow-up compared with women in the comparison city (55 versus 29%;  $P = 0.05$ ). No significant differences were noted between the two cities in either time period in the proportion of women reporting positive beliefs (two or more) about cervical cancer and screening or the proportion of women with good knowledge (five or more correct answers) about cervical cancer and screening (Paskett et al., 1999). Building on the tailored print cervical cancer screening behavior intervention finding, Dignan and co-workers examined the effects of health education on Increasing Screening for Cervical Cancer among Eastern-Band Cherokee Indian Women in North Carolina. The North Carolina Native American Cervical Cancer Prevention Project was a 5-year, National Cancer Institute-funded trial of health education designed to increase screening for cervical cancer among Native-American women in North Carolina. This study was conducted to evaluate the effectiveness of this education program in the Eastern-Band Cherokee target population. Cherokee tribal lands were mapped and all households ( $N = 2223$ ) were listed to ensure maximum coverage of the eligible population (women, aged 18 years and older, who were enrolled tribal members). Eligible women were identified by the use of a brief questionnaire administered to an adult



member of the household. Of the 1279 households with eligible women, 1020 (79.8%) agreed to participate. The intervention was an individualized health education program delivered by female Cherokee lay health educators based on several theories and models including Health belief model. The participants were randomly assigned to receive or not to receive the intervention (i.e., to program and control groups, respectively) by use of the Solomon Four-Group design. Data were collected in face-to-face interviews conducted in the participant's home. Of the 996 women who were ultimately enrolled, 540 were randomly assigned to receive a pretest (pre intervention) interview that involved administration of a 96-item questionnaire designed to collect data on knowledge, intentions, and behaviors related to cervical cancer; of these 540 women, 263 were randomly assigned to receive the education program. The remaining 456 women did not receive the pretest, but 218 were randomly assigned to receive the education program. Six months after receiving the education program, the women in all four groups were administered a post-test that was identical to the pretest. Logistic regression was used to assess the effects of the pretest and the educational program. All *P* values resulted from two-sided statistical tests. Results of this study showed eight hundred and fifteen (81.8%) of the 996 participants completed the post-test interview. The remaining 181 women who were lost to follow-up were evenly distributed among the four study groups. At the post-test, 282 (73.2%) of the 385 women who received the education program reported having had a Pap smear following the intervention, compared with 275 (64%) of the 430 control subjects. Women who received the education program were more likely to answer all knowledge items correctly on the post-test (odds ratio [OR] = 2.18, 95% confidence interval [CI] = 1.08- 4.39) and to report having obtained a Pap smear in the past year (OR = 2.06, 95% CI = 1.14-3.72) than women in the control groups. This study concluded women who received the education program exhibited a greater knowledge about cervical cancer prevention and were more likely to have reported having had a Pap smear within the past year than women who did not receive the program (D'Ignan, 1996).

HEALTH BELIEF MODEL variables have also formed the basis for an interventional program to improve beliefs and behaviors of screening for cervical cancer among Iranian people. A quasi-experimental study was conducted in Hamadan , Iran, in 2010. In this study, 70 women - aged 16 to 54 years - who had never done Pap test until the date of the study, participated voluntarily. The volunteers were divided into several small groups. For each group, 2-hour training session was held. The data collection tool was a self-administered multi-choice questionnaire that was developed based on HBM constructs. Health beliefs and practice of the target group were evaluated pre intervention and four months later. The findings indicated that education based on HBM was effective and could enhance the participants' knowledge significantly and improve the HBM constructs including perceived susceptibility, severity, benefits, and barriers. The training program enhanced the practice of screening test significantly. This study concluded that education program based on HBM can enhance women's knowledge of cervical cancer, change their health beliefs and improve their behaviors regarding screening programs like Pap test (Shojaeizadeh, 2011). In study that was conducted in Somali education about the purpose of the screening test and the programme was considered as key procedure in encouraging Somalis to take up screening. The participants felt that Somali health advocates or community workers should provide this information in a community setting. In their opinion, this would help women to understand the value of the test, and should aim to



address some women's misinterpretation of the Islamic perspective regarding disease prevention and help to overcome fatalistic barriers to screening. Participants favored education from Somali speakers, and no participant suggested the need for increased opportunities to learn English. Overall, participants favored verbal modes of communication, reflecting Somali people having an oral culture. Participants suggested improving awareness of screening via the use of video, DVDs, CDs and audiotapes (Abdullahi, 2009). In previous evidence, possible solutions suggested by the participants included the provision of education and information about cervical screening in the Somali language by Somali community workers. They also suggested that healthcare staff should be trained about Somali culture, particularly regarding female circumcision, and that general practitioners should more proactively encourage Somali women to attend screening (Abdullahi 2009).

## 5. Conclusion

This chapter highlighted the concepts of Health Belief Model that could be applied for cervical cancer screening test. In summary, Health Belief Model constructs generally have been found to predict participation in cervical cancer screening. In addition, a large number of interventions studied addressing Health Belief Model constructs have resulted in increased cervical cancer screening behavior. The interventions tailored to address recipient's specific Health Belief Model beliefs have been found to be particularly effective. It is entirely consistent with the Health Belief Model that intervention will be more effective if address the persons' specific perception about susceptibility, barrier and self efficacy. Women who already believe they are at risk for developing cervical cancer screening behavior do not need messages trying to convince them to their susceptibility, those who know where to get a free pap smear but cannot find a way to get there need intervention addressing transportation not cost. Just as it is important to be able to measure validity of Health Belief Model construct, tailoring technology has allowed interventions to address Health Belief Model constructs most relevant for particular intervention. Also in this chapter, the literature review summarized cervical cancer screening beliefs and attitudes of Hispanic women using the Health Belief Model. Perceived barriers (e.g., fear of cancer, embarrassment, fatalistic views of cancer, and language), as well as perceived susceptibility (e.g., belief that screening tests are not necessary/ needed impede screening. Physician recommendations and community outreach programs are effective strategies to increase breast and cervical cancer screening uptake among Hispanic women. The specific findings of this literature review indicate that cancer-screening programs should use multi sectorial approaches to address culture-specific issues and provide culturally sensitive and competent services.

## 6. References

- Agurto, I., Bishop, A., Sanchez, G., et al (2004). Perceived barriers and benefits to cervical cancer screening in Latin America. *Preventive Medicine*, Vol, 39. No,1.( Jul 2004), pp., 91-8.
- Al-Naggar RA, Low WY, Isa ZM (2010). Knowledge and barriers towards cervical cancer screening among young women in Malaysia.. *Asian Pacific Journal of Cancer Prevention*., Vol,11. No,4. pp. 867-73.

- Allahverdipour, H., Emami, A., Perceptions of cervical cancer threat, benefits, and barriers of Papanicolaou smear screening programs for women in Iran. *Women & Health*, Vol.47, No.3, pp.23-37.
- Abdullahi, A., Copping, J., Kessel, A., Luck, M., Bonell, C.(2009). Cervical screening: Perceptions and barriers to uptake among Somali women in Camden. *Public Health*, Vol.123, No.10, (Oct 2009), pp.680-5.
- Ackerson, K. (2010). Personal Influences That Affect Motivation in Pap Smear Testing Among African American Women. *Journal of Obstetrics, Gynecologic & Neonatal Nursing*, Vol, 39.No,2, pp.136-146.
- Akbari, F., Shakibazadeh, E., Pourreza, A., Tavafian, SS. (2010) . Barriers and Facilitating Factors for Cervical Cancer Screening: a Qualitative Study from Iran. *Iranian Journal of Cancer Prevention*, Vol,13. No.,4. pp. 178-84
- Anderson1, Jo., Mullins, RM., Siahpush, M., Spittal, MJ, & Wakefield, M.(2009) .Mass media campaign improves cervical screening across all socio-economic groups. *HEALTH EDUCATION RESEARCH* , Vol,24.No, 5.( Apr 2009). pp. 867–875.
- Balcazar, H., Castro, FG., Krull, JL (1995). Cancer risk reduction in Mexican American women: the role of acculturation, education, and health risk factors. *Health Education Quarterly*, Vol,21.No, 1.( Feb 1995). pp. 61–84.
- Bakemeier, RF., Krebs, LU., Murphy, JR., Shen, Z., Ryals, T. (1995).Attitudes of Colorado health professionals toward breast and cervical cancer screening in Hispanic women. *Journal of the National Cancer Institute, Monograph*, Vol,18,. (1995), pp. 95-100.
- Bazargan, M., Bazargan, SH., Farooq, M., & Baker, RS. (2004). Correlates of cervical cancer screening among underserved Hispanic and African-American women. *Preventive Medicine*, Vol.39, No., 3. (Sep 2004), pp.465-473.
- Beach, ML., Flood, AB., Robinson, CM. et al (2007). Can Language-Concordant Prevention Care Managers Improve Cancer Screening Rates? *Cancer Epidemiology, Biomarkers & Prevention* ,Vol.16, No.10, (Oct 2007),pp. 2058-2064.
- Ben-Natan, M., & Adir , O. (2009) . Screening for cervical cancer among Israeli women. *International Nursing Review*, Vol. 56, No.4, (Dec 2009), pp.433–441.
- Boyer, LE., Williams, M., Callister, LC., & Marshall, ES. (2001). Hispanic women's perceptions regarding cervical cancer screening. *Journal of Obstetrics, Gynecology, & Neonatal Nursing*, Vol. 30, No.2. pp (Mar 2001),. 240-245.
- Burton, RC. Cancer control in Australia: into the 21(st) Century. *Japanese Journal of Clinical Oncology*, 32 Suppl:S3-9. (Mar 2002), pp.53-9.
- Basu, P., Sarkar, S., Mukherjee, S., Ghoshal, M., Mittal, S. et al. Women's perceptions and social barriers determine compliance to cervical screening: results from a population based study in India. *Cancer Detection and Prevention* Vol.;30. No.4. (2006), pp.369-74.
- Champion V.L., & Skinner C.S. (2008) . The Health belief model, In: *Health behavior and health education*, Glanz K, Rimer B.K, & Viswanath , K pp45- 66. Jossey-Bass, ISBN: 978-0-7879 – 614-7, U.S.A..

- Chung, HH, Kim, JW, Kang, SB. (2006). Cost is a barrier to widespread use of liquid-based cytology for cervical cancer screening in Korea. *Journal of Korean Medical Sciences*, Vol .21,No.6.(Dec 2006), pp.1054-9.
- Cohen, SS., Palmieri, RT., Nyante, SJ, Koralek, DO., Kim, S., et al. Obesity and screening for breast, cervical, and colorectal cancer in women: a Review. *Cancer*, Vol.112, No.9(may 2008), pp.1892-904.
- Coughlin, SS., King, J., Richards, et al..(2006). Cervical cancer screening among women in metropolitan areas of the United States by individual-level and area-based measures of socioeconomic status, 2000 to 2002. *Cancer Epidemiology, Biomarkers & Prevention*, Vol. 15, No.11( Nov 2006), pp. 2154-9.
- Castro, FG., Elder, JP., Tafoya-Barraza, HM., Moratto, S., Campbell, N., et al. (1995). Mobilizing churches for health promotion in Latino communities: Companeros en la Salud. *Journal of the National Cancer Institute, Monograph*, Vol.18 (1995) ,pp.127-135.
- Chavez, LR., Hubbell, FA., Mishra, SI., Valdez, RB. (1997). The influence of fatalism on self-reported use of Papanicolaou smears. *American Journal of Preventive Medicine*, Vol.;13, No.6 ( Nov-Dec 1997):418-424.
- Coyne, CA., Hohman, K., Levinson, A. (1992). Reaching special populations with breast and cervical cancer public education. *Journal of Cancer Education*, Vol. 7, No.4,( 1992) , pp. 293-303.
- Datta, G., Colditz, G., Kawachi, I., et al.(2006). Individual-, neighborhood-, and state-level socioeconomic predictors of cervical carcinoma screening among U.S. black women. *Cancer*, Vol 106, No. 3 (Feb 2006), pp. 664-9.
- Davis, DT., Bustamante, A., Brown, CP. (1994). The urban church and cancer control: a source of social influence in minority communities. *Public Health Reports* ,Vol.109, No.4 (Jul-Agu 1994), pp. :500-6.
- Dignan, M., Michielutte, R., Blinson, K., Wells, HB., Douglas Case, LD., et al. ( 1996). Effectiveness of Health Education to Increase Screening for Cervical Cancer Among Eastern-Band Cherokee Indian Women in North Carolina. *Journal of the National Cancer Institute*, Vol, 88. No, 22 ( Nov 1996) pp.1670-6.
- De Alba, I., Hubbell, FA., McMullin, JM., Sweningson, JM., Saitz, R.(2005)..Impact of U.S. citizenship status on cancer screening among immigrant women. *Journal of General Internal Medicine* Vol. 20, .No. 3.(Mar 2005), pp.290-6.
- Frank-Stromborg, M., Wassner, LJ., Nelson, M., Chilton, B., Wholeben, BE.(1998).A study of rural Latino women seeking cancer-detection examinations. *Journal of Cancer Education*, Vol. 13, No. 4 (winter 1998),pp. 231-241.
- Gakidou, E., Nordhagen, S., Obermeyer, Z. (2008).Coverage of Cervical Cancer Screening in 57 Countries: Low Average Levels and Large Inequalities. *PLoS Medicine*, Vol.5, No.6, (June 2008), e132. doi:10.1371
- Garbers, S., Chiasson, MA.(2004). Inadequate functional health literacy in Spanish as a barrier to cervical cancer screening among immigrant Latinas in New York City. *Preventive Chronic Disease*, Vol.1, No.4. (Oct 2004) , A07. Epub 2004 Sep 15.

- Goel, MS., Wee, CC., McCarthy, EP., Davis, RB., Ngo-Metzger, Q., et al. (2003). Racial and ethnic disparities in cancer screening: the importance of foreign birth as a barrier to care. *Journal of General Internal Medicine*, Vol.18, No.12 (2003 Dec), pp 1028-35.
- Hubbell, FA., Chavez, LR., Mishra, SI., Valdez, RB. (1996). Differing beliefs about breast cancer among Latinas and Anglo women. *Western Journal of Medicine*, vol. 164, No. 5 (May 1996), 405-409.
- Harlan, LC., Bernstein, AB., Kessler, LG.(1991). Cervical cancer screening: who is not screened and why? *American Journal of Public Health*,Vol.81,No.7 ( Jul 1991), pp.885-90.
- Eng, E., Parker, E., Harlan, C. (1997) Lay health advisor intervention strategies: a continuum from natural helping to paraprofessional helping. *Health Education & Behavior*, Vol.24, No.4(Aug 1997),pp. 413- 417.
- Hoque, M., Ibekwe, CM., Ntuli-Ngcobo, B. Screening and Perceived Severity of Cervical Cancer among Women Attending Mahalapye District Hospital, Botswana . *Asian Pacific Journal of Cancer Prevention*, Vol 10 ( 2009), 1095-1100.
- Hoyo, C., Yarnall, KS H., Skinner, CS., Moorman, PG., Sellers, D. et al (2005). Pain predicts non-adherence to Pap smear screening among middle-aged African American women. *Preventive Medicine*, vol.41,No.2 (Aug 2005),pp. 439-445.
- Ibekwe CM, Hoque ME, Ntuli-Ngcobo B (2010). Perceived Benefits of Cervical Cancer Screening among Women Attending Mahalapye District Hospital, Botswana. *Asian Pacific Journal of Cancer Prevention*, Vol. 11,No.4 (2010), pp., 1021-1027.
- Kiefe, CI., Funkhouser, E., Fouad, MN., May, DS. (1998). Chronic disease as a barrier to breast and cervical cancer screening. *Journal of General Internal Medicine*, Vol.13, No.6. (June 1998), pp.357-65.
- Leyva, M., Byrd, T., Tarwater, P. (2006). Attitudes towards cervical cancer screening: A study of beliefs among women in Mexico. *Californian Journal of Health Promotion*, Vol. 4, No.2 ( 2006), pp.13-24.
- Lee, M.C. (2000) Knowledge, barriers and motivators related to cervical cancer screening among Korean-American women: a focus group approach. *Cancer Nursing*, Vol. 23, No.3 (June 2000), pp.168-175.
- Lofters, A., Glazier, R., Agha, M et al. (2007). Inadequacy of cervical cancer screening among urban recent immigrants: a population-based study of physician and laboratory claims in Toronto, Canada. *Preventive Medicine* Vol. 44, No.6 (2007), 536-42.
- McFarland DM (2003). Cervical cancer and pap smear screening in Botswana: knowledge and perception. *International Nursing Review*, Vol, 50, No.3 ( Sep 2003),pp.167-75.
- Mandelblatt, JS., Gold, K., O'Malley, AS., Taylor, K., Cagney, K. et al.(1999). Breast and cervix cancer screening among multiethnic women: role of age, health, and source of care. *Preventive Medicine*, Vol.28, No.4 (Apr 1999), pp. 418-425
- Mandelblatt, JS., Yabroff, KR. (2000). Breast and cervical cancer screening for older women: recommendations and challenges for the 21st century. *Journal of the American Medical Women's Association*, Vol.55,No.4 ( Summer 2000) , pp.210-215.
- Matuk, LC (1996). Pap smear screening practices in newcomer women. *Women's Health Issues*, Vol.6, No.2( Mar 1996), pp. 82-8.



- Mutyaba, T., Mmiro, F., Weiderpass, E. (2006). Knowledge, attitudes and practices on cervical cancer screening among the medical workers of Mulago Hospital, Uganda. *BMC Medical Education*, Vol.6, No.13 (Mar 2006). doi: 10.1186/1472-6920-6-13
- Naish, J., Brown, J., Denton, B. (1994). Intercultural consultations: investigation of factors that deter non-English speaking women from attending their general practitioners for cervical screening. *BMJ*, Vol. 309, No. 6962 ( Oct 1994), pp.1126-1128.
- Obiechina, NJ., Mbamara, SU. (2009). Knowledge, attitude and practice of cervical cancer screening, among sexually active women in Onitsha, southeast Nigeria. *Nigerian Journal of Medicine*, Vol.18, No.4 (Oct-Dec 2009), :384-7.
- O'Malley, MS., Earp, JA., Hawley, ST., Schell, MJ., Mathews, HF. (2001). The association of race/ethnicity, socioeconomic status, and physician recommendation for mammography: who gets the message about breast cancer screening? *American Journal of Public Health*, Vol.91, No.1(Jan 2009), pp. 49-54.
- Paskett ED., Tatum CM., Ralph, D. Agostino, Jr. et al. (1999). Community-based Interventions to Improve Breast and Cervical Cancer Screening: Results of the Forsyth County (FoCaS) Project: *Cancer Epidemiology Biomarkers & Prevention*, Vol.8 ( May 1999), pp. 453-459.
- Perez-Stable EJ, Sabogal F, Otero-Sabogal R, Hiatt RA, McPhee SJ. Misconceptions about cancer among Latinos and Anglos. *The Journal of American Medical Association*, Vol.268, No.62 (1992),pp.3219-3223.
- Ross, JS., Nuñez-Smith, M., Forsyth, BA., Rosenbaum, JR.(2008). Racial and ethnic differences in personal cervical cancer screening amongst post-graduate physicians: results from a cross-sectional survey. *BMC Public Health*. 30, Vol.8,No,378 (Oct 2008). doi: 10.1186/1471-2458-8-378
- Ross, JS. Forsyth, BA., Rosenbaum, JR(2006). Brief report: House staff adherence to cervical cancer screening recommendations. *Journal of General Internal Medicine.*, Vol. 21, NO.1(Jan 2006), pp.68-70.
- Richardson, J., Marks, G., Solis, JM., Collins, LM., Birba, L.(1987). Frequency and adequacy of breast cancer screening among elderly Hispanic women. *Preventive Medicine*, Vol.16, No.6 ( Nov1987), pp. 761-774.
- Mullins,R., Wakefield1, M., Broun, K. (2008). Encouraging the right women to attend for cervical cancer screening: results from a targeted television campaign in Victoria. Australia. *Health Education Rresearch*, Vol, 23. No, 3 (Jan 2008), pp .477-486.
- Rimer, BK. (1994). Interventions to increase breast screening: lifespan and ethnicity issues. *Cancer*, Vol. 74. No. 1 Suppl. ( Jul 1994), pp. 323-328.
- Salazar, MK.(1994). Hispanic women's beliefs about breast cancer and mammography. *Cancer Nursing*, Vol.19, No.6 ( dec 1996), pp. 437-446.
- Sankaranarayanan R, Thara S, Esmey PO, Basu P (2008). Cervical cancer: screening and therapeutic perspectives. *Medical Principal and Practice*, Vol. 17, No.5 (2008), pp.351-64.
- Sauvageau, C., Duval, B., Gilca, V., Lavoie, F., Ouakki, M. (2007). Human papilloma virus vaccine and cervical cancer screening acceptability among adults in Quebec, Canada. *BMC Public Health*, Vol.7, No. 304. Published online Oct 2007 25. doi: 10.1186/1471-2458-7-304.



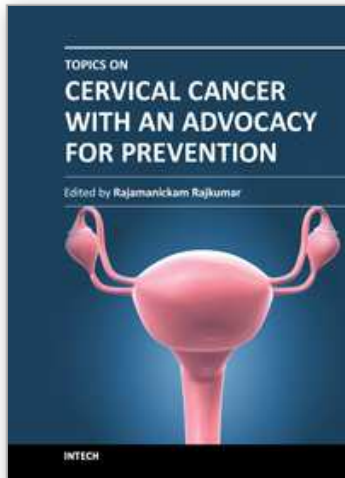
- Scarinci, IC., Bandura, L., Hidalgo, B., Cherrington, A.(2011). Development of a Theory-Based (PEN-3 and Health belief model), Culturally Relevant Intervention on Cervical Cancer Prevention among Latina Immigrants Using Intervention Mapping. *Health Promotion Practice*,( Mar 2011). [Epub ahead of print]
- Shojaeizadeh, D., Hashemi, Z., Moeini, B., Poorolajal, J. (2011). The Effect of Educational Program on Increasing Cervical Cancer Screening Behavior among Women in Hamadan, Iran: Applying Health belief model. *Journal of Research Health Sciences*, Vol, 11. No, 1 (2011), pp.20-25.
- Snyder, L., Hamilton, M., Mitchell, E. et al. (2004). A meta-analysis of the effect of mediated health communication campaigns on behavior change in the United States. *Journal of Health Communication*; Vol. 9, No. Supp 1(2004), pp. 71-96.
- Snider, J., Beauvais, J., Levy, I., Villeneuve, P., Pennock, J. (1996). Trends in mammography and pap smear utilization in Canada. *Chronic Disease in Canada* , Vol.17, No.3-4 (1996). pp.108-117.
- Stein, JA. & Fox, SA. Language preference as an indicator of mammography use among Hispanic women. *Journal of the National Cancer Institute* Vol 82, No. 21( Nov 1990), pp.1715-1716.
- Suarez, L. Nichols, DC. Brady, CA. (1993a). Use of peer role models to increase Pap smear and mammogram screening in Mexican-American and Black women. *American Journal of Preventive Medicine* ;Vol 9, No.5 (Sep-Oct 1993), pp. 290-296.
- Suarez, L., Nichols, DC., Pulley, L., Brady, CA., McAlister, A. (1993b). Local health departments implement a theory-based model to increase breast and cervical cancer screening. *Public Health Reports* 1993;Vol .108, No.4 (June 1993), 477-482.
- Saslow, D., Runowicz, CD., Solomon, D., Moscicki, AB., Smith, RA. et al. (2002). American cancer society guideline for the early detection of cervical neoplasia and cancer. *A Cancer Journal for Clinicians*, vol.52, No, 6 (2002), pp. 342-362.
- Tristen C, Bergstrom S (1996). Cervical cancer in developing countries. A threat to reproductive health. *Lakartidningen*, vol.93, No.39 (Sep 1996), pp.3374-6.
- Taylor, VM., Yasui, Y., Burke, N., Nguyen, T., Acorda, E.(2004). Pap testing adherence among Vietnamese American women. *Cancer Epidemiology, Biomarkers & Prevention*, Vol.13.,No.4. (Apr 2004), pp.613-9.
- Vellozzi, CJ., Romans, M., Rothenberg, RB. (1996). Delivering breast and cervical cancer screening services to underserved women: Part 1. Literature review and telephone survey. *Women's Health Issues* Vol 6, no.2: (Mar-Aug 1996), pp. 65-73.
- Wee, CC., McCarthy, EP., Davis, RB. Phillips, RS. (2000). Screening for cervical and breast cancer: is obesity an unrecognized barrier to preventive care? *Annals of Internal Medicine*. Vol.132, No. 2 (May 2000), pp. 697-704.
- Were, E., Nyaberi, Z., Buziba, N. (2011). Perceptions of risk and barriers to cervical cancer screening at Moi Teaching and Referral Hospital (MTRH), Eldoret, Kenya. *African Health Sciences*, Vol, 11, No,1 (Mar, 2011).pp. 58 - 64.
- Winkler, J., Bingham, A., Coffey, P., Handwerker, WP. (2008). Women's participation in a cervical cancer screening program in northern Peru. *Health Education Research*, Vol. 23, No.1(Feb 2008) ,pp. 10-24.

Zambrana, RE., Breen, N., Fox, SA., Gutierrez-Mohamed, ML. Use of cancer screening practices by Hispanic women: analyses by subgroup. *Preventive Medicine*; Vol 29, No. 6, (Dec 1999), pp. 466-477.

Zavertnik, JJ. Strategies for reaching poor Blacks and Hispanics in Dade County, Florida. *Cancer*, Vol. 72, No. 3 Suppl( 1993 Aug), pp. 1088-1092.

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## **Topics on Cervical Cancer With an Advocacy for Prevention**

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Cervical Cancer is one of the leading cancers among women, especially in developing countries. Prevention and control are the most important public health strategies. Empowerment of women, education, "earlier" screening by affordable technologies like visual inspection, and treatment of precancers by cryotherapy/ LEEP are the most promising interventions to reduce the burden of cervical cancer. Dr Rajamanickam Rajkumar had the privilege of establishing a rural population based cancer registry in South India in 1996, as well as planning and implementing a large scale screening program for cervical cancer in 2000. The program was able to show a reduction in the incidence rate of cervical cancer by 25%, and reduction in mortality rate by 35%. This was the greatest inspiration for him to work on cervical cancer prevention, and he edited this book to inspire others to initiate such programs in developing countries. InTech - Open Access Publisher plays a major role in this crusade against cancer, and the authors have contributed to it very well.

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Phone: +86-21-62489820  
Fax: +86-21-62489821

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