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LAWAL, Olanrewaju, MURPHY, Fred, HOGG, Peter and NIGHTINGALE, Julie

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Health behavioural theories and their application to women's participation in mammography screening: a narrative review

Authors: Mr LAWAL, Olanrewaju; Dr. MURPHY, Fred; Prof. HOGG, Peter; Prof. NIGHTINGALE, Julie.

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ABSTRACT

The most effective method of detecting breast cancer amongst asymptomatic women is by mammography screening. Although, most countries have this preventive measure in place for women within their society; most of these programmes still struggle with women's attendance. This article discusses four health behavioural theories and models, in relation to mammography screening, including the health belief model, theory of planned behaviour, trans-theoretical model, and the theory of care seeking behaviour that may explain the factors affecting women's participation in mammography screening.

In summary, analysis of these theories indicates that the theory of care seeking behaviour has value for exploring the factors affecting women's participation in mammography screening. This is because of its sensitivity to socioeconomic differences that exists amongst women in the society, and that it has a broader construct (such as habit and external factors) compared to the other health behavioural theories.

INTRODUCTION

Breast cancer is the leading cause of death amongst women worldwide (Ferlay et al., 2013). It is the second most common cancer with about 1.7 million new cases diagnosed worldwide in 2012 (World Health Organisation, 2013). The incidence of breast cancer varies in different geographical locations, with Western Europe reporting the highest incidence and middle Africa reporting the lowest incidence (Ferlay et al., 2013). Higher mortality rates, however, are found within the African continent, with more than half of the women found to have had breast cancer dying of the condition (Ferlay et al., 2013). The high mortality rate in these regions could be associated with factors such as: late presentation of the women for diagnosis and treatment, inadequate diagnostic and treatment facilities, poor knowledge and lack of participation of women in the breast cancer screening programmes where available (Coleman et al., 2008).

For a screening programme to be effective in reducing the mortality rate of women as a result of breast cancer, it has to record both a high participation rate and a high detection rate of breast lesions (Tabar et al., 2003). However, even developed nations with established screening programmes struggle to encourage women's attendance at their mammography screening programmes. The United Kingdom (UK) Health and Social Care Information Centre (2015) shows that even with the UK Government's effort to ensure that at least 70% of eligible women participate regularly in the mammography screening programme, this target has not been achieved amongst women living in London, with the black population being under- represented (Renshaw et al., 2010). The issue of some minority groups being under-represented in mammography screening programmes has also been reported in several other studies conducted in the United States of America [USA]

(Alexandraki and Mooradian, 2010), though the screening programmes in these countries cannot be directly compared to each other because of the varied characteristics of these programmes (Lawal et al., 2015).

The aim of this article is to explore a range of health behavioural theories which could be applied to mammography screening. Health behaviour theories have been developed to predict reasons why people choose to or not to participate in health promotion programmes. However, only a few of these theories have relevance to mammography screening because of their construct validity (Glanz et al., 2008, Lauver et al., 1997, Lauver et al., 2003a) as many of them were developed for different settings and purposes. Understanding the relative merits and limitations of these theories might inform future mammography participation research design, and application of strategies supported by these theories within mammography screening programmes might also improve women's participation.

Painters et al., (2008) identifies that the health belief model, trans-theoretical model, theory of planned behaviour, and social cognitive theory are the most frequently used health behavioural theories. However, an additional theory, the theory of care seeking behaviour, was developed specifically to explore the factors affecting women's participation in mammography screening programmes (Lauver, 1992, Lor et al., 2013). The health behaviour theories can be classified into two groups; the first group focuses on how individual factors predict a person's health behaviour; the second group focuses on how society influences a person's health behaviour. In this second group lies the social cognitive theory focusing on how the society, social interactions and the media influence an individual's participation in a health promotion programme. However this article provides an overview of the four other

theories that focus on individual, rather than societal factors to predict or explain women's health behaviour, in the context of mammography screening.

THE FOUR THEORIES

A theory is a set of statements or principles devised to explain a group of facts or phenomena. Many scientific theories have been repeatedly tested and can be used to make predictions about natural phenomena. The components of a theory are known as constructs, and mathematical or systematic relationships between a set of constructs (explanatory variables) are used to explain its assumptions.

This narrative review discusses the health behavioural theories that have been used in mammography screening, and relevant articles were drawn from databases including Science Direct, Medline, and Google Scholar, using 'mammography screening' and 'health behaviour' as the search terms. The key constructs of the primary health behavioural theories are compared and contrasted in Table 1, and discussed below.

Main feature of the theories

The oldest of the four theories is the **health belief model**. It was developed by social psychologists Hochbaum, Rosenstock, and Kogels in the 1950s (Rosenstock, 1966). It was developed to explain and predict the health behaviour of individuals by focusing on the beliefs and attitude of the individuals (Glanz et al., 2008). These researchers set out to investigate the factors responsible for the failure of a free tuberculosis screening

programme in the USA (Glanz et al., 2002). Since then, this model has been used to explain short and long-term health behaviours, including mammography screening programme attendance (Guvenc et al., 2011). The model assumes that a woman will participate in mammography screening if:

i. She has a positive expectation that by taking part in the mammography screening programme she can avoid or reduce her chance of dying as a result of breast cancer. For instance, Lee and Vang (2010) reported in their study that most women that believe that mammography screening can reduce mortality rate because of its ability to detect early breast cancer, attended the mammography screening programme. Logically, this factor emphasises the need for education of women on the benefits of having a mammogram, as incorrect or incomplete knowledge of the benefits of the programme might affect women's participation in mammography screening.

ii. She believes that she can participate confidently in the mammography screening programme. That is, self-efficacy; it refers to a woman's belief in her own ability to successfully perform a health behaviour. This construct, developed from the Bandura's self-efficacy theory (Bandura, 1978), was added to the health belief model in 1988, after several studies showed that self-efficacy and 'cue to action' directly influenced health behaviour (Rosenstock et al., 1988). It explains a woman's confidence to adopt a healthy behaviour without relapsing even when faced with high-risk situations (Prochaska, 2013). These high-risk situations could be considered as the environmental factors that might hinder women from having a mammogram such as availability of mammography screening units, and the cost of having a mammogram in countries where the women have to pay.

The second theory is the **trans- theoretical model**, developed by James Prochaska in 1977, as a result of the comparative analysis of several theories on behavioural change and psychotherapy (Prochaska, 2013). This uses the principles and processes of change within major theories of health intervention by integrating the stages of change within them (Prochaska et al., 1992). The trans-theoretical model has four core constructs, which are the stages of change, process of change, decisional balance, and self-efficacy. The trans-theoretical model was used by researchers to explore immigrant Muslim women's living in the United States of America mammography screening practices and found to yield relevant information on how to improve this group of women's attendance in mammography screening (Hasnain et al., 2014a). However, it was used with the health belief model as a theoretical framework to guide the study as it is useful to explore the effectiveness of introducing an intervention rather than directly explore the women's behaviour towards mammography screening attendance.

The third theory is the **theory of planned behaviour**; it also attempts to predict the health behaviour of women by focusing on the women's belief and attitude. It was developed by social psychologists Ajzen and Fishbein in 1980 and was originally known as the theory of reasoned action (Ajzen and Madden, 1986). They believed that all human behaviours are voluntarily controlled. However, further evidence shows that not all behaviour can be voluntarily controlled, therefore a construct was added that predicts individual health behaviour, which is, perceived behavioural control. This led to renaming the theory as the theory of planned behaviour, as this theory aims to predict deliberate behaviours (Ajzen, 2011). The constructs central to this are attitude, social norms, perceived behavioural control and intention. It assumes that the intention to perform the behaviour determines a

woman's adoption of the health behaviour. For instance, women's actual participation in a mammography screening programme is determined by their intention to have the mammogram (intention leads to behaviour). However, several studies have shown that a woman's intention to participate in a mammography screening programme does not always lead to them actually participating (Walker, 2012). The theory explains that intention is determined by three constructs, which are attitude, subjective norms, and perceived behavioural control.

The final theory explored is the **theory of care seeking behaviour**. It was developed to explain the reasons why people do or do not participate in health promotional programmes such as mammography screening programmes (Lor et al., 2013). It was developed in 1992 from Triandis theory of behaviour (Lauver, 1992), but has been modified to suit cancer-screening behaviour. A construct from the original Triandis theory, physiological arousal, is not included as a predicting factor of behaviour because logically, when associated with health threats (example cancer), it results in depression and anxiety (Lauver et al., 1997). The constructs in this theory are: clinical factors, socio-demographical factors, affects, beliefs, norms, habits, and external resources. The theory shows that clinical and socio-demographical factors indirectly influence the care seeking behaviour of screening participants through psychosocial constructs such as affects, beliefs, norms, and habits. The theory of care seeking behaviour has been used in exploring women's health behaviour in different settings and ethnic backgrounds such as, low-income Caucasian and African American women (Lauver et al., 1997).

Similarity exists between several of the constructs within the theories outlined above, including the process of comparing the potential benefit to the potential risk (Prochaska,

2013, Walker, 2012). For example *perceived threat with benefit* in the health belief model refers to the same thing as *decisional balance* in trans-theoretical model, *affect and belief* in the theory of care seeking behaviour and *attitude* in the theory of planned behaviour. These constructs have two components: the beliefs about the effects or outcomes of the behaviour, and the corresponding evaluation of these effects. A woman could believe that having a mammogram regularly would reduce her chances of dying as a result of breast cancer, or would lead to her developing breast cancer as a result of exposing her breast to ionising radiation. Her evaluation of these positive and negative outcomes would influence her decision to have a mammogram. The woman is more likely to have a mammogram if she has a stronger belief in the positive outcome compared to the negative outcome. Logically, this factor emphasises the need for the proper education of women on the benefits and risks of having a mammogram, as incorrect or incomplete knowledge of the benefits of the programme might affect women's participation in mammography screening. Similarly, African women who believe they are less susceptible to developing breast cancer as a result of the lower incidence of breast cancer amongst them compared to white women (Fregene and Newman, 2005), would need to understand the benefit and risk of having a mammogram for their particular ethnic group.

Self-efficacy is another construct that has commonality across the theories. It is represented as *self-efficacy* in the health belief model, and trans-theoretical model, but it is known as *perceived behavioural control* in the theory of planned behaviour and as *external factor* in the theory of care seeking behaviour. This construct can be adjusted by the care provided to enhance women's participation in the mammography screening programme. Examples of ways this construct can affect women's participation in a mammography screening

programme as reported by the literature are: affordability, geographic access, acceptance of mammography screening within a community (Lor et al., 2013). In countries with a high level of poverty, organising a free mammography screening programme might be a very important facilitator to encourage women to participate in regular breast screening. In rural areas, geographic accessibility of the mammography screening units by providing a mobile mammography van might be an important facilitator, as women might not be willing to travel far to have a mammogram (the cost and time of travel being prohibitive). Klug et al. (2005) mentioned that women's knowledge of the benefits and risks of mammography screening, and experience of previous mammography examination (that is satisfaction or dissatisfaction) might influence their decision on whether or not to participate in mammography screening, and this additional knowledge can improve participation rates amongst women within a society.

Finally, the construct *subjective norm* in the theory of planned behaviour is similar to the construct known as *norm* in the theory of care seeking behaviour. This consists of three elements; social norm, personal norm, and interpersonal agreement (Lor et al., 2013). Social norm refers to the custom and tradition that represents a person's knowledge of what others do or what others think of participating in mammography screening programmes. Personal norm refers to the person's knowledge of what she thinks of participating in the mammography screening programme, and interpersonal agreement is the interactions between people on why or why not to participate in mammography screening programmes. A woman's belief about how people around them would like them to behave is known as the *normative belief*. The construct assumes that women are more likely to have a mammogram if they believe it is socially acceptable to do so. Therefore, the positive social

norm in terms of perception of mammography in the media is important. Surprisingly, in some cultural settings, women believe that having a mammogram indicates that the woman has breast cancer (Baron-Epel et al., 2004). This could be as a result of the lack of education regarding the benefits of participating in a mammography screening programme, or alternatively because of the negative social norm that exists within their population. Furthermore, women who are less interested about what others think might have a neutral subjective norm towards the health behaviour, in this case perceived behavioural control would play a significant role in predicting their health behaviour.

Cultural influence plays a substantial role in affecting participation in mammography screening programmes. For example, in a study conducted amongst Jordanian and another amongst Somalian women residing in the USA, it was reported that they perceived that breast cancer is a shameful illness and therefore women would prefer to die without being diagnosed with the disease (Al Dasoqi et al., 2013, Al-Amoudi et al., 2015). Another study conducted on Arab- Israeli women reported cultural beliefs, that young women should not think about mammography screening which could be seen as 'self-indulgent' because having children, and being totally committed to family, are attributed as the role of women in their society (Baron-Epel et al., 2004).

Table 1: Comparison of the health behavioural theories that explore women's behaviour towards mammography screening

	Health belief model	Theory of planned behaviour	Trans theoretical model	Theory of care seeking behaviour
Main features	• Developed by Hochbaum, Rosenstock, and Kogels in the 1950s. • Constructs are: ▪ Perceived susceptibility ▪ Perceived severity ▪ Perceived barrier ▪ Perceived benefit ▪ Self-efficacy ▪ Cue to action	• Developed by Ajzen and Fishbein in 1980. • Constructs are: ▪ Attitude ▪ Subjective norm ▪ Perceived behavioural control ▪ Intentions	• Developed by James Prochaska in 1977. • Constructs are; ▪ Stages of change ▪ Processes of change ▪ Decisional balance ▪ Self-efficacy	• Developed by Lauver in 1992. • Constructs are: ▪ Affect ▪ Belief ▪ Habit ▪ Norms ▪ Clinical and socioeconomic factors ▪ External factors
Advantage	It has a construct that explores the trigger to health behaviour, which is the cue to action.	The addition of perceived behavioural control as a construct that helps predicts a woman's adoption of a health behaviour.	It explores women's health behaviour through the stages of change to a healthier behaviour.	It includes broader constructs such as habit, clinical and socioeconomic factor, and external factors.
Limitations	• It does not explore the effect of socio economic factor on behaviour. • It does not have a construct to explore the effect of habit on behaviour.	• Intention does not always lead to a person performing health behaviour. • It also does not explore the effect of socio economic factor on behaviour.	• Inconsistent findings noticed amongst studies that evaluated the relationship between the processes and stages of change.	• The low use of theory in behavioural studies, to explore women's health behaviour towards mammography screening
Application in mammography screening programme literature	Women with multiple sclerosis in the USA (Paraska, 2012), Taiwanese women (Wang et al., 2014), Iranian women (Noroozi and Tahmasebi, 2011), Korean women living in USA (Lee et al., 2009)	American Indian women (Tolma et al., 2014), Australian women (Browne and Chan, 2012), Women living in the Quebec geographical region of Canada (Godin et al., 2001), Cypriot women (Tolma et al., 2006)	Women in the USA (Hatcher-Keller et al., 2014), Muslim women living in USA (Hasnain et al., 2014b), African- American women (Fair et al., 2012), Greek women (Kaltsa et al., 2013)	Hmong women in the USA (Lor et al., 2013), Women in the USA(Lauver et al., 2003b, Lauver et al., 1997, Lauver et al., 2003a),

Appropriateness of the theories for mammography screening

The presence of a construct known as the *cue to action* in the health belief model is an important construct as it gives the researcher an opportunity to explore the effectiveness of the method of invitation available in the mammography screening programme. The cue to action refers to the stimulus needed to trigger the acceptance of the health behaviour (Glanz et al., 2008). The stimulus could be either internal (for example: appearance of breast cancer symptoms in symptomatic patients) or external (for example: illness of family member or friend, newspaper article, mass media campaign, invitation letter, etc. in asymptomatic women). However, *stages of change* and *processes of change* in the trans-theoretical model might not be directly effective in exploring the factors affecting women's participation, as it is useful in evaluating the effectiveness of an intervention such as the methods of inviting women into the mammography screening programme. Furthermore, the studies that have evaluated the relationship between the process of change and stages of change have not been consistent with their findings (Bridle et al., 2005, Glanz et al., 2008), which give readers weak confidence in the model. The application of these theories in different settings to explore factors affecting attendance in mammography screening programme is displayed in table 1.

While all four theories have been used as a framework to explore participation in mammography screening, detailed review of the theory of care seeking behaviour identifies that it uses broader constructs relevant to mammography screening behaviour compared to the other health behaviour theories. It considers a woman's habit towards similar health screening programmes (e.g. HIV testing or cervical cancer screening) which might affect their health behaviour towards mammography screening (Lauver, 1992). Furthermore, the theory is more sensitive to the effects of socio-economic status on participation and

mammography screening behaviour. This could be vital to our understanding of why participation rates are lower in some less privileged communities. A recent study by Lor et al. (2013) used the theory to explore the factors affecting a community of women in California (Hmong community) with low socioeconomic status and low participation in mammography screening programme. The findings show that the constructs fits well with the views of the women in the study, however, a major limitation of this study is that they did not present the socio-demographic background of the participants that had been recruited in the study. While the other three well-established theories have a strong track record of application to mammography screening, the theory of care seeking behaviour, while not yet widely implemented, offers a novel approach to investigate factors affecting participation in the mammography screening programme, particularly in contexts where there is inherent low participation and/or low socio-economic status such as within the African sub-continent.

SUMMARY

In summation, the theories and models examined all appear to have been widely used in understanding women's behaviour towards mammography screening in many different settings. However, researchers need to understand the limitations of these theories before utilising them in their investigations, as the limitations could falsify the findings of these studies. This is especially important in environments where the effect of the limitations – those factors not accounted for – could be significant in reducing women's participation in mammography screening programmes.

Women's habit towards adopting a healthier behaviour similar to regular participation in mammography screening, as well as their socioeconomic characteristics, can significantly affect behaviour towards mammography screening. Therefore, due to the strengths of the theory of care seeking behaviour, it can be adopted in exploring the factors affecting women's participation in the mammography screening programme. Future research should explore the effect of the constructs in this theory on women's behaviour towards mammography screening.

REFERENCE LIST

AJZEN, I. 2011. The theory of planned behaviour: Reactions and reflections. *Psychology & Health,* 26**,** 1113-1127.

AJZEN, I. & MADDEN, T. J. 1986. Prediction of Goal-Directed Behavior - Attitudes, Intentions, and Perceived Behavioral-Control. *Journal of Experimental Social Psychology,* 22**,** 453-474.

AL-AMOUDI, S., CANAS, J., HOHL, S. D., DISTELHORST, S. R. & THOMPSON, B. 2015. Breaking the silence: breast cancer knowledge and beliefs among Somali Muslim women in Seattle, Washington. *Health Care Women International,* 36**,** 608-16.

AL DASOQI, K., ZEILANI, R., ABDALRAHIM, M. & EVANS, C. 2013. Screening for breast cancer among young Jordanian women: ambiguity and apprehension. *Int Nurs Rev,* 60**,** 351-7.

BANDURA, A. 1978. Social Learning Theory of Aggression. *Journal of Communication,* 28**,** 12-29.

BARON-EPEL, O., GRANOT, M., BADARNA, S. & AVRAMI, S. 2004. Perceptions of breast cancer among Arab Israeli women. *Women Health,* 40**,** 101-16.

BRIDLE, C., RIEMSMA, R. P., PATTENDEN, J., SOWDEN, A. J., MATHER, L., WATT, I. S. & WALKER, A. 2005. Systematic review of the effectiveness of health behavior interventions based on the transtheoretical model. *Psychology & Health,* 20**,** 283-301.

BROWNE, J. L. & CHAN, A. Y. C. 2012. Using the Theory of Planned Behaviour and implementation intentions to predict and facilitate upward family communication about mammography. *Psychology & Health,* 27**,** 655-673.

FAIR, A. M., MONAHAN, P. O., RUSSELL, K., ZHAO, Q. & CHAMPION, V. L. 2012. The interaction of perceived risk and benefits and its relationship to predicting mammography adherence in African-American women. *Oncology nursing forum,* 39**,** 53-60.

FREGENE, A. & NEWMAN, L. A. 2005. Breast cancer in sub-Saharan Africa: How does it relate to breast cancer in African-American women? *Cancer,* 103**,** 1540-1550.

GLANZ, K., RIMER, B. & VISWANATH, K. 2002. *Perspectives on using theory. In Health Behavior and Health Education: Theory, Research, and Practice.,* San Francisco, Jossey-Bass.

GLANZ, K., RIMER, B. K. & VISWANATH, K. 2008. *Health Behaviour and Health Education Theory, Research, and Practice,* San Francisco, Jossey- Bass.

GODIN, G., GAGNÉ, C., MAZIADE, J., MOREAULT, L., BEAULIEU, D. & MOREL, S. 2001. Breast cancer: The intention to have a mammography and a clinical breast examination - application of the theory of planned behavior. *Psychology & Health,* 16**,** 423-441.

GUVENC, G., AKYUZ, A. & ACIKEL, C. 2011. Health Belief Model Scale for Cervical Cancer and Pap Smear Test: psychometric testing. *Journal of Advanced Nursing,* 67**,** 428-437.

HASNAIN, M., MENON, U., FERRANS, C. E. & SZALACHA, L. 2014a. Breast Cancer Screening Practices Among First-Generation Immigrant Muslim Women. *Journal of Women's Health,* 23**,** 602-612.

HATCHER-KELLER, J., RAYENS, M. K., DIGNAN, M., SCHOENBERG, N. & ALLISON, P. 2014. Beliefs Regarding Mammography Screening Among Women Visiting the Emergency Department for Nonurgent Care. *Journal of Emergency Nursing,* 40**,** e27-e35.

KALTSA, A., HOLLOWAY, A. & COX, K. 2013. Factors that influence mammography screening behaviour: A qualitative study of Greek women's experiences. *European Journal of Oncology Nursing,* 17**,** 292-301.

LAUVER, D. 1992. A Theory of Care-seeking Behavior. *Image: the Journal of Nursing Scholarship,* 24**,** 281-288.

LAUVER, D., NABHOLZ, S., SCOTT, K. & TAK, Y. 1997. Testing Theoretical Explanations Of Mammography Use. *Nursing Research,* 46**,** 32-39.

LAUVER, D. R., HENRIQUES, J. B., SETTERSTEN, L. & BUMANN, M. C. 2003a. Psychosocial Variables, External Barriers, and Stage of Mammography Adoption. *Health Psychology Review,* 22**,** 649-653.

LAUVER, D. R., SETTERSTEN, L., KANE, J. H. & HENRIQUES, J. B. 2003b. Tailored messages, external barriers, and women's utilization of professional breast cancer screening over time. *Cancer,* 97**,** 2724-2735.

LEE, H., KIM, J. & HAN, H. R. 2009. Do cultural factors predict mammography behaviour among Korean immigrants in the USA? *Journal of Advanced Nursing,* 65**,** 2574-2584.

LOR, M., KHANG, P. Y., XIONG, P., MOUA, K. F. & LAUVER, D. 2013. Understanding Hmong women's beliefs, feelings, norms, and external conditions about breast and cervical cancer screening. *Public Health Nurs,* 30**,** 420-8.

NOROOZI, A. & TAHMASEBI, R. 2011. Factors influencing breast cancer screening behavior among Iranian women. *Asian Pacific Journal of Cancer Prevention,* 12**,** 1239-1244.

PARASKA, K. 2012. Relationship Between Expanded Health Belief Model Variables and Mammography Screening Adherence in Women with Multiple Sclerosis. *International Journal of MS Care,* 14**,** 142-147.

PROCHASKA, J. 2013. Transtheoretical Model of Behavior Change. *In:* GELLMAN, M. & TURNER, J. R. (eds.) *Encyclopedia of Behavioral Medicine.* Springer New York.

PROCHASKA, J. O., DICLEMENTE, C. C. & NORCROSS, J. C. 1992. In search of how people change. Applications to addictive behaviors. *The American psychologist,* 47**,** 1102.

ROSENSTOCK, I. M. 1966. Why People Use Health Services. *The Milbank Memorial Fund Quarterly,* 44**,** 94-127.

ROSENSTOCK, I. M., STRECHER, V. J. & BECKER, M. H. 1988. Social Learning Theory and the Health Belief Model. *Health Education & Behavior,* 15**,** 175-183.

TOLMA, E., STONER, J., LI, J., KIM, Y. & ENGELMAN, K. 2014. Predictors of regular mammography use among American Indian women in Oklahoma: a cross-sectional study. *BMC Women's Health,* 14**,** 101.

TOLMA, E. L., REININGER, B. M., EVANS, A. & UREDA, J. 2006. Examining the Theory of Planned Behavior and the Construct of Self-Efficacy to Predict Mammography Intention. *Health Education & Behavior,* 33**,** 233-251.

WALKER, J. 2012. *Psychology For Nurses And The Caring Professions,* Maidenhead, Maidenhead : McGraw-Hill Education.

WANG, W. L., HSU, S. D., WANG, J. H., HUANG, L. C. & HSU, W. L. 2014. Survey of breast cancer mammography screening behaviors in Eastern Taiwan based on a health belief model. *Kaohsiung J Med Sci,* 30**,** 422-7.