VALIDATION OF MALAY-VERSION INCONTINENCE QUALITY OF LIFE (I-QOL) AND INCONTINENCE PRAYING ABILITY (I-PA) AMONG CHILDBEARING WOMEN ATTENDING HOSPITAL UNIVERSITI SAINS MALAYSIA (HUSM)

HANIS BINTI ISMAIL

UNIVERSITI SAINS MALYSIA

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Validation of Malay-Version Incontinence Quality Of Life (I-QOL) And Incontinence Praying Ability (I-PA) Among Childbearing Women Attending Hospital Universiti Sains Malaysia (HUSM)

by

Hanis Binti Ismail

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LIST OF ABBREVIATIONS

AVE	Average Variance Explained
CFA	Confirmatory Factor Analysis
CFI	Composite Fix Index
CI	Confidence Interval
CIfit	Close Fit
CR	Construct Reliability
df	Degree Of Freedom
EFA	Exploratory Factor Analysis
HUSM	Hospital Universiti Sanis Malaysia
I-PA	Incontinence Praying Ability
I-QOL	Incontinence Quality Of Life
KMO	Kaiser-Mayer-Olkin
MI	Modification Indices
PAF	Pricipal Axis Factoring
r	Correlation Coefficient
RMSEA	Root Mean Square Error Of Approximation
SRMR	Standardizrd Root Mean Square Residuals
TLI	Tucker-Lewis Index
USM	Universiti Sains Malaysia
VIF	Variance Inflation Factors
x^2	Chi-Square

ABSTRACT

INTRODUCTION: The assessment of quality-of life and praying ability become crucial especially among women. However, there are no any validated instruments to assess those aspects in Malaysia population. Thus, the study will focused on validation of Malay-version Incontinence Quality of Life (I-QOL) and Incontinence Praying Ability (I-PA) among Muslim women under childbearing age. I-QOL was an established instrument that measure quality-of-life among UI patients and had been widely used by other countries while I-PA was new developed instrument that focus on praying ability among UI patients. This new developed instrument was made based on Malaysia population that majority among them were Muslim.

OBJECTIVES: To determine the construct validity and reliability of I-QOL and I-PA model among Muslim women under childbearing age that attends particular clinics at HUSM by EFA and CFA as well as to assess the concurrent validity between both models.

METHODS: Cross-sectional study was done in two phase of EFA and CFA. Thus, data collection was done two times. EFA was assessed by using statistical software of SPSS version 22. It was conducted by using Principal Axis Factoring (PAF) extraction method with promax rotation. While CFA was measured by using statistical software of Mplus version 7.3 and was conducted by using MLM estimation.

RESULTS: All items of I-PA were remained in the model during the EFA phase and the measurement reliability by cronbach's alpha was 0.946. Assessment by CFA reported the final model of I-PA consist one factor and 10 item with 5 error covariance with value of CFI=0.971 and TLI=0.956. While, the measurement of I-QoL by CFA reported the final model consist one factor and 22 items with 12 error covariance with value of CFI=0.932 and TLI=0.920.

CONCLUSION: I-QOL and I-PA were proven to be valid and reliable in Malay language among Muslim women under childbearing age and there were high correlation between both of them

ABSTRAK

PENGENALAN: Kajian terhadap kualiti hidup dan keupayaan mendirikan solat menjadi penting terutamanya di kalangan wanita. Walaubagaimnapun, masih tiada alat yang sahih yang boleh digunakan untuk mengukur kedua-dua aspek tersebut. Justeru itu, kajian ini akan memberi tumpuan terhadap kesahihan dan kebolehpercayaan borang soal selidik I-QOL dan I-PA di kalangan wanita muslim yang mampu melahirkn anak.

OBJEKTIF: Untuk menentukan kesahihan dan kebopercayaan borang soal selidik I-QOL dan I-PA di kalangan wanita islam yang mampu melahirkan anak melalui EFA dan CFA selain mengukur hubungan diantara kedua-dua borang soal selidik tersebut.

METODOLOGI: Kajian kertan rentas telah dijalankan dalam dua fasa EFA dan CFA. Justeru, pengumpulan data telah dijalankan dua kali. EFA dikaji dengn menggunkan SPSS versi 22 dan dilakukan dengen mnggunkan cara pengekstrakan PAF serta pusingan promax. Sementara itu, CFA dijalankan dengan menggunkan Mplus versi 7.3 serta dilakukan dengan menggunakan anggaran MLM.

KEPUTUSAN: Keseluruhan item di dalam model I-PA tidak dikeluarkan semasa EFA dan nilai ketaatazan dalaman melalui alfa cronbach ialah 0.946. Pengukuran dari CFA melaporkan model akhir untuk I-PA menggandungi satu factor dan 10 item bersama lima ralat kovarian dengan nilai CFI=0.971 dan TLI=0.956. Sementara itu, pengukuran I-QOL melalui CFA melaporkan model akhir menggandungi satu factor dan 22 item bersama 12 ralat kovarian dengan nilai CFI=0.932 dan TLI=0.920.

KESIMPULAN: I-QOL dan I-PA telah terbukti sahih di dalam bahasa Melayu dan boleh dipercayai untuk digunakan di kalangan wanita Muslim yang boleh melahirkan anak dan terdapat hubungan yang tinggi di antara kedua-dua model tersebut.

CHAPTER 1 : INTRODUCTION

1.1 Introduction

Urinary Incontinence (UI) is a common chronic condition that affects people of all ages (Minassian *et al.*, 2008). Commonly, this condition of UI was recognized as a major health problem for women and was a widespread health problem and affecting 10-50% of women during their lifetimes (Monz *et al.*, 2007). The study among general population showed that UI affects 10-40% of women and was regarded as severe in around a quarter of them (Glasier *et al.*, 2006). However, UI will not lead to death although the patient having severe types of UI.

Generally, women are most tendency to have UI compare to men (Corcos *et al.*, 2002). It is twice as common in women as in men. Buckley and friends (2010) had reported that the prevalence rates of UI among men are less than in women by ratio 1 to 2. Besides, study among older persons showed the sex differences in prevalence of UI with women more likely to get UI (Herzog and Fultz, 1990).

UI was reported as an important health problem with psychological, social and hygienic effects on life of both women and their families (Kocak *et al.*, 2005). Previous studies showed that UI will affect substantial debility, social seclusion, psychologic stress and economic burden (Nojomi *et al.*, 2008). Nojomi and friends (2008) also reported that women with UI associated with loss of independence and decreased participation in social as well as domestic activities. Moreover, UI also has been noted to be a major barrier to social interest, entertainment and physical recreation (Broome, 2003).

There were a lot of aspects that can be measured to assess the impact of UI. One of those aspects was assessment of Quality-Of-Life (QOL). The assessment of QOL become interested since Broome (2003) stated that women with UI tend to report a poorer QOL. Corcos (2002) also state that the assessment of QOL can be useful outcomes in benign diseases like UI. Besides, the assessment of impact of UI towards QOL have been used in a wide variety of patients with UI problem and have proved to be appropriate outcome measures (Corcos *et al.*, 2002).

Since the assessment of QOL become important, a number of instruments have been developed to assess the impact of UI towards QOL (Donovan *et al.*, 2002). Commonly, the researcher will choose a disease-specific QOL instrument because of its ability to widely measure the impact of UI towards QOL including some criteria like physical, social and emotional function (Corcos *et al.*, 2002). In this study, instrument of I-QOL was selected to measure the impact of UI towards QOL since the variables used to assess the impact of UI towards QOL in this questionnaire seem to be appropriate and suitable in Malaysia population. However, the problem arises once to use this questionnaire as this QOL instrument have not validated among Malaysian population as well as in Malay language yet (Dariah, 2011). As a result, this study was focused on validation of I-QOL instrument in Malay language version among Malaysia population.

Rather than QOL assessment, Dariah (2011) from her previous study stated that the assessment of praying ability among women with UI may be one to be measured too since majority of Malaysia population were Muslim. Besides, among Muslim women with UI problem, difficulty to perform prayer due to UI could contribute to QOL problem (El-Azab and Mascha, 2009).

Due to this consideration, Dariah (2001) had developed new instrument of Incontinence Praying Ability (I-PA) to assess the impact of UI towards praying ability. This set of questionnaire will focus on QOL of Muslim women in aspect of performing prayers. Since the questionnaire was new developed instrument, the validation of this instrument become crucial and essential. Consequently, rather than I-QOL instrument, I-PA instrument also was validated in this study.

As a conclusion, this study was emphasis on validation of Malay-version of I-QOL and I-PA among Muslim women of Malaysian population. The validation of both selected instruments was included two sections which were validity and reliability. The validity part for both instruments was done using factor analysis method of construct validity which comprised Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA).

Construct validity of I-PA included both types of EFA and CFA while construct validity of I-QOL only measured by CFA. The construct validity assessment of CFA were included both convergent and discriminant validity. Part of EFA was done by using statistical software of Software Package for Social Sciences (SPSS) version 22 under license of Universiti Sains Malaysia (USM). While CFA part was run using statistical software of Mplus version 7.3 under license of Biostatistics and Research Methodology Department School of Medical Sciences, Universiti Sains Malaysia (USM).

Due to some consideration of time, cost and sample adequacy, both instruments were validated among Muslim women under childbearing age and were conducted at Hospital Universiti Sains Malaysia (HUSM), Kubang Kerian Kelantan.

1.2 Problem Statement

It is extremely important to know if the selected questionnaire measures what it is intended to measure (Kazi and Khalid, 2012). Thus, in order for questionnaire to be useful, the data it produces must be trustworthy. Hence, to establish the set of question that will produce the data that is related to the interested aspect, the questionnaire must be validated. The validation of questionnaire is essential for new developed questionnaire, translated questionnaire to different language and used the questionnaire to different population.

From the previous study, there was no validated I-QOL among Malaysian population yet. This instrument of QOL was not available in Malay language. The original questionnaire of I-QOL is from western countries and was written in English language. Hence a translated version of this instrument was required for assessing local population, as the study population for each country may different language, culture and demographic.

I-PA model was a new developed questionnaire design to measure the influence of having UI towards ability, difficulty and satisfaction while perform prayers. Thus, scale used as well as number of factor of this model need to be accurate and precise. The questionnaire cannot be used until the validation of this instrument has been done. Usually pilot study should be done and validated in order to evaluate if the instrument was measuring the correct measurement. Kazi and friends (2012) stated that a new developed questionnaire should be or must be pilot tested and validated in order to evaluate if it is measuring what is supposed to measure and is it doing it reliably.

1.3 Justification Of The Study

This study provides a discussion of measurement validity and reliability of Malay-version of I-QOL and I-PA model in Malaysia population. The study was performed to developed the validate instrument tools in order to measure the effect of UI towards QOL and praying ability among Muslim women under childbearing age.

The measurement validity of I-PA model was carried out via both method of EFA and CFA of construct validity. Hence, the differences of measurement validity between both analyses could be observed. While, measurement reliability was analysed by cronbach's alpha of internal consistency.

Since I-QOL model was an established questionnaire and had been validated in many version of language, the validation of this instrument in Malay language could detect the differences with other versions of language. Indirectly, the differences could presence how the UI impact QOL in different population based on variables assessed in this I-QOL model. In addition, using an established questionnaire will save time and resources as well as can compare the finding or result with those from other studies (Boynton and Greenhalgh, 2004).

Soon as the study was completed, a validated and reliable of I-QOL and I-PA model in Malay language will be obtained. Thus, the study will provide simple and comprehensive instruments to measure QOL as well as praying ability among Muslim women under childbearing age with UI problem. Further, the instruments later can be used in other population that share the same cultural and demographic factors.

1.4 Research Questions

1. Does Malay-version of I-PA have valid construct validity by EFA?
2. Does Malay-version of I-PA have good internal consistency of reliability?
3. Does Malay-version of I-PA and I-QOL have valid construct validity by CFA?
4. Does Malay-version of I-PA and I-QOL have good construct reliability?
5. Are there any correlation between Malay-version of I-QOL and I-PA?

1.5 Research Hypotheses

1. The Malay-version of I-PA is valid among childbearing women attending HUSM by EFA.
2. The Malay-version of I-PA is reliable among childbearing women attending HUSM with good to excellent value of cronbach's alpha.
3. The Malay-version of I-PA and I-QOL are valid among childbearing women attending HUSM by CFA
4. The Malay-version of I-PA and I-QOL are reliable among childbearing women attending HUSM by CFA
5. There are significant correlation between Malay-version of I-QOL and I-PA with good to perfect value of correlation coefficient.

1.6 Objectives

1.6.1 General Objective

To examine the validity and reliability of Malay-version of Incontinence Praying Ability (I-PA) and Incontinence Quality of Life (I-QOL) among Muslim women under childbearing age that attends particular clinics at Hospital Universiti Sains Malaysia (HUSM).

1.6.2 Specific Objectives

1. To explore the construct validity of Malay-version I-PA among childbearing women attending HUSM, using EFA.
2. To identify the internal consistency of Malay-version of I-PA among childbearing women attending HUSM, using cronbach's alpha.
3. To confirm the construct validity of Malay-version of I-PA and I-QOL among childbearing women attending HUSM, using CFA.
4. To recognise the construct reliability of Malay-version of I-PA and I-QOL among childbearing women attending HUSM, using CFA.
5. To assess the correlation between Malay-version of I-QOL and I-PA.

CHAPTER 2 : LITERATURE REVIEW

2.1 Urinary Incontinence (UI)

Urinary incontinence (UI) is not a disease, but rather a symptom resulting from impairment of the bladder or of the sphincter mechanism (Corcos *et al.,* 2002). Commonly, UI was defined as a condition of involuntary leakage of urine. It is an inability to hold urine in the bladder because voluntary control over the urinary sphincter is either lost or weakened. This condition of UI can be defined as any involuntary loss of urine and can occur in all ages for many different reasons (Buckley and Lapitan, 2010). According to International Continence Society (ICS) Standardization Committee defined UI as "a condition in which involuntary loss of urine is a social or hygienic problem and is objectively demonstrable" (Corcos *et al.*, 2002) (Park and Kang, 2014) (Saleh *et al.,* 2005). Specifically, the definition of UI should be detail as being more than just a physiologic condition, but should be further described by specifying relevant factors such as type, frequency, severity, precipitating factors, social impact, effect on hygiene and impacts on quality of life including physical, emotional and social well-being (Goode *et al.*).

Condition of UI can be classified into three levels which are severe UI, moderate UI and mild UI. Severe UI was defined as incontinence a few times or more per week, moderate UI was defined as incontinence frequency of a few month only and mild UI was defined as incontinence frequency of a few times per year only (Minassian *et al.*, 2008). Besides that, UI also can be classified into three types which are stress incontinence, urge incontinence and mixed incontinence. Stress incontinence was

defined as urine loss due to coughing, sneezing, exercise or exertion, urge incontinence was defined as urine loss accompanied by or immediately preceded by urgency and mixed incontinence was combination between both stress incontinence and urge incontinence (Anifantaki *et al.*, 2009). According to Anifantaki (2009), the definition of these three types of UI were based on classification according to women's description of the circumstances under they had a leakage.

Prevalence of UI would represent the important characteristics of UI as it appeared or occurred in the study population (Herzog and Fultz, 1990). Based on study by Herzog and friends (1990), prevalence of UI could be defined as the probability of being incontinent or it is estimation by the number of incontinent persons divided by the total number of examined persons. However, the estimation of the prevalence of incontinence depends on the definition used to describe the occurrence of UI as well as the population studied (Thomas *et al.*, 1980). Besides, study by Minassian (2008) stated that the prevalence of any types of UI will increase with age. However, the trend of prevalence will varies according to types of UI (Minassian *et al.*, 2008). Other study stated that there was a variance in epidemiological data regarding prevalence rate of UI due to inconsistent definitions of incontinence, differences in questionnaires, settings and methodologies as well as the reliability of self-report data (Broome, 2003).

Based on the population surveyed and the definition adopted, the prevalence rate of UI varies from 4.5 to 53% for women and from 1.6 to 24% for men (Yu *et al.*, 2003). The lowest prevalence rate of UI among women in general population was estimate 13% and was reported at Hong Kong (Dariah, 2011). While, the highest prevalence rate of UI among women was reported 54.8%. This prevalence rate was based on community-

based survey in urban and rural areas in a region of Upper Egypt among 1 652 women (El-Azab *et al.*, 2007). Other study reported that the median prevalence of any types of UI among women was 27.6% and this estimation was concluded based on 35 studies among women with any types of UI (Minassian *et al.*, 2008).

According to Broome (2003), UI affects about 15% to 35% among adult population. Among the effects were depression, self-efficacy and QOL (Broome, 2003). Depression has been suggested to occur in incontinent persons (Fanti, 1996) and previous studies stated that incontinence would leads to depression, anxiety or even hysteria (Zorn *et al.*, 1999). In addition, women with UI also more likely to report a poorer QOL as well as self-efficacy since the effect of self-efficacy on QOL were positively related to each other (Hunskaar and Vinsnes, 1991). Others studies had reported UI has been associated with social isolation, loneliness, falls, nursing home admission, hospitalization and an increased need for informal care (Fultz *et al.*, 2004).

As assessment of having UI towards QOL become interested aspect, the use of appropriated and validate instrument to assess those aspect become important as incorrect instrument used can influenced the result of measurement. Unfortunately, such instruments were not available in Malaysia and the existing instruments used in other countries were not available in the Malay language (Dariah, 2011). Therefore, the use of that instrument among Malaysia population becomes doubtful. Rather than QOL, praying ability assessment while having UI becomes crucial aspect since majority of Malaysia population was Muslim (Dariah, 2011). Hence, the developing and validating instruments in measuring the influence of UI towards QOL and praying ability among Malaysia population become objective in this study.

2.2 Urinary Incontinence Among Women

Many women experience uncontrollable leakage of urine and this condition of UI was recognised as common, debilitating and costly problem for women (Dariah, 2011). UI can be prevalent case among women but it is preventable, curable and manageable (Hunskaar *et al.*, 2000).

Among women with UI problem, childbearing women, pregnancy women, postnatal women and menopause women are higher tendency to get UI. Previous research state that childbearing women are potency to get UI due to some factors and the main contributing factor was vaginal delivery as a result of damage to important muscle tissue or nerves (Rortveit *et al.*, 2003). Rortveit and friends (2003) also reported that pregnancy also can lead to UI caused by mechanical changes, hormonal changes or both of them among childbearing women. Moreover, in women, common factors associated with UI includes childbearing age, body mass index, previous hysterectomy and other comorbidities (Minassian *et al.*, 2008). Hence, women under childbearing age were being selected in this study as s reference population.

Generally, definition of childbearing is relating to the process of conceiving, being pregnant and giving birth to children. According to Longman Dictionary of Contemporary English under the topic of birth, childbearing is defined as "the process of being pregnant and giving birth to children". Whereas childbearing age is defined as "if a woman is of childbearing age or in her childbearing years, she is of an age when it is physically possible for her to have babies". In simple words, it is the period in a women life between puberty and menopause stage.

As the study include instrument that measure the influence of UI towards praying ability, women with religion of Islam were being selected in this study. Muslim women were choosing as reference population in this study since the instrument used was designed in assessment of effect of UI towards performing salah among Muslim women. Besides, UI has a much more distressing effect on the QOL of Muslim women than on those who are Jewish, Hindu or Christian (Chaliha and Stanton, 1999) (Sange and Hill, 2008).

The validation of instrument that measure the effect of UI towards QOL among Muslim women become important since the exist instrument were not focused on aspect of QOL as a Muslim like difficulty in performing salah while having UI. Besides, information gained from an urogynaecologist stated that there were low percentage of Muslim women had being assessed on UI (Sange and Hill, 2008). This situation happens due to limited of validated instrument in measuring effect of UI towards women in aspect of QOL among Muslim. Besides, the situation happen due to lack of knowledge about the condition or the sensitive nature of the subject (Wilkinson, 2001). For example, Wilkinson (2001) found that Asian women which are majority were Muslim felt that health professionals were not interested in their problems and did not provide adequate support.

Due to some limitation and consideration, Muslim women under childbearing age were selected as reference population in this study. Both pregnant and non-pregnant women under childbearing age were selected. The range of age of childbearing women selected was between 18 until 45 years old. The range was selected based on majority since every woman was not same in term of their puberty and menopause age.

2.3 Quality-Of-Life (QOL)

Quality-Of-Life (QOL) has always been a topic of interest in philosophy where QOL or the good life was viewed as a virtuous life (Veenhoven, 2007). Among childbearing women with UI, QOL assessment was possibly the most important outcome to be measured. Ultimately, QOL can be used to assess the effectiveness of certain treatment. QOL was very difficult to be defined and its can be applied in many aspects of life (Fairclough *et al.*, 1996). In this study the QOL was focused on UI aspect.

The term of QOL directly describe the expression of overall sense of wellbeing, happiness and satisfaction of life. The World Health Organization (WHO) defined QOL as an individual perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns (Group, 1998). There were some ways to measure and evaluate QOL. Two methods that usually used were physician assessment and QOL instrument that involves a number of questions (Group, 1995).

The technique of physician assessment was much simple and easy to apply compare using QOL instrument since the physician will simply asking the question to patients and rate it using scale ranging from 0 to 10. The assessment using QOL instrument need to be conducted by face-to-face interview in which patients will be respondent. This technique can be done by self-administered or be supervised. A QOL instrument used in this study was Incontinence Quality of Life (I-QOL). The instrument was choosing by Dariah (2011) based on some aspects and the description of I-QOL was explained in subtopic below.

2.4 Praying Ability

In Malaysia, the official religion is Islam and to perform prayers is obligatory for all follower of Islam (Dariah, 2011). Since perform prayers become part of daily routine among Muslim in Malaysia, assessment of the impact of UI towards perform prayers become crucial.

Prayer requires women to stand, bend and sit several times. Maintaining cleanliness for women with UI was difficult while performing prayer since those movements may cause leakage (Sange and Hill, 2008). The empirical findings by Dariah (2011) indicated that UI had little impact on the praying ability among women with UI problem. Among the impacts, they indicated the feeling of 'insecurity' while performing prayer. Those feeling of 'insecurity' would cause them to repeat the ritual cleansing before successfully completing their prayer because fear of leakage would prevent them from meeting their religious obligations (Sange and Hill, 2008) (Dariah, 2011).

Based on finding by Dariah (2011), she states that the impact of UI on praying ability among women with UI was similar to that of QOL. Besides, other study among Egyptian women indicate that inability to perform prayer while having UI problem was the most distressing QOL issue (El-Azab *et al.*, 2007). This suggests that UI has a much more distressing effect on Muslim women than those of other religions. Since, there were no yet appropriate tools to measure the impacts of UI towards praying ability, Dariah (2011) from her previous study had developed Incontinence Praying Ability (I-PA). The description of I-PA was explained in subtopic below.

2.5 Validation Of Measurement Tools

Validation of questionnaire was compulsory for every established and produced questionnaire in order to know how much accurate the questionnaire can measure the interested aspect (Drost, 2011). Besides new developed questionnaire, questionnaire that had been validated also need to be validate again due to some situations like the questionnaire had been used too long ago, the questionnaire were validating in different language, validate among different population, validate with wrong analysis and validate with inadequate sample size required (Cronbach and Meehl, 1955). These situations make the validated questionnaire doubtful to be used.

Measurement can be defined as the process of observing and recording the observations that are collected as part of a research effort (Trochim, 2006). There are two compulsory measurements in order to construct validated and functional questionnaires. Those two measurements are validity and reliability (Drost, 2011). The assessment of both of them is very important and compulsory to ensure those developed questionnaires measure what need to be measured.

2.5.1 Incontinence Quality Of Life (I-QOL) Model

Incontinence Quality Of Life (I-QOL) was used to evaluate the influence of UI towards QOL. This I-QOL questionnaire was developed and validated by Patrick and friends (1999) with value of cronbach's alpha 0.95 (Patrick *et al.*, 1999). Patrick (1999) stated that I-QOL was designed to be applicable to all persons who experience UI.

Based on the previous study, reported that most of the patients with UI problem who review the existed QOL instrument said that too many of the questions dealt with their condition and too few questions reflected their emotions. As a result based on their feedback, the team of the researchers decide to develop the instrument of I-QOL (Wagner *et al.*, 1996). During the development of the I-QOL, emphasis was placed on making sure that the instrument covered all of the important issues and each item of it was easy to be understood (Wagner *et al.*, 1996). Meanwhile, other research report that the initial development of the I-QOL was approached using a requirement based on model of Health-Related Quality Of Life (HRQOL) (Bushnell *et al.*, 2005).

Patrick (1999) suggested that I-QOL comprises three factors with 22 items. The factors are Avoidance and Limiting Behaviour (ALB), Psychosocial Impacts (PI) and Social Embarrassment (SE) (Patrick *et al.*, 1999). ALB consists eight items, PI consists nine items and SE consists five items (Park and Kang, 2014) (Nojomi *et al.*, 2009). Each item was evaluated with a five-point likert-type response scale with answers ranging from 'Extremely' to 'Not at all' (Park and Kang, 2014). It is an easy to understand self-administered questionnaire that takes an average of five minutes to complete (Nojomi *et al.*, 2009).

The original instrument of I-QOL was developed in United States (US) (Bushnell *et al.*, 2005). The instrument has been translated into more than 20 European, Asian, North and South American and African languages. Bushnell and friends (2005) had performed the study on differences of I-QOL in 15 versions of language. The finding from this study was summarized in Table 2.1 below.

Table 2.1 The differences of measurement reliability of I-QOL in 15 versions of language (Bushnell *et al.*, 2005)

Language	cronbach's alpha			
	I-QOL	I-QOL (ALB)	I-QOL (PI)	I-QOL (SE)
Australia (n=76)	0.94	0.83	0.90	0.85
Belgium (n=62)	0.94	0.84	0.91	0.86
Brazil (n=40)	0.92	0.82	0.88	0.72
Canada English (n=65)	0.91	0.82	0.85	0.78
Canada French (n=53)	0.95	0.87	0.91	0.85
Denmark (n=50)	0.93	0.88	0.81	0.78
Spain (n=44)	0.92	0.74	0.89	0.77
United Kingdom (n=79)	0.91	0.80	0.85	0.79
The Netherlands (n=102)	0.94	0.85	0.89	0.90
Poland (n=140)	0.94	0.82	0.92	0.87
South Africa (n=117)	0.93	0.82	0.89	0.83
Sweden (n=118)	0.94	0.86	0.91	0.84
USA (n=851)	0.94	0.84	0.90	0.86
Greece (n=52	0.93	0.80	0.92	0.84
Slovakia (n=52)	0.96	0.88	0.94	0.86

Besides, Najomi (2009) had performed the study on translation and validation of I-QOL in Iranian version. The result of the measurement reliability of cronbach's alpha of overall I-QOL in Iranian version was 0.96 (Nojomi *et al.*, 2009). However, there was no validation study on I-QOL in Malay language yet (Dariah, 2011).

The instrument of I-QOL was translated into Malay language and tested by back-translation method (Dariah, 2011). Initially, she had performed direct translation from the original English version into the Malay language. After reviewed by a group of Malaysian bilingual, changes and correction were done before proceed with back-translation process.

2.5.2 Incontinence Praying Ability (I-PA) Model

Incontinence Praying Ability (I-PA) was a new developed instrument in Malay language by Dariah (2011). This instrument was established in her previous study to measure the praying ability among urinary incontinence patients. The instrument consist 1 domain of spiritual with 10 items. Similar like Incontinence Quality of Life (I-QOL) instrument, the Incontinence Praying Ability (I-PA) instrument is five-point likert-type response scale from 'extremely' point until 'not at all' point. Since the instrument is new developed and having no any value of internal consistency of cronbach's alpha, the validation of this instrument need to be done to make sure the instrument is valid and reliably to measure among appropriate target population

2.6 Measurement Of Validity

According to Fletcher and Wagner (1996), measurement validity is the degree to which the data measure what they were intended to measure (Fletcher *et al.*, 1996). Measurement validity also can be basically defined as how close the data reflect the true state of what being measured (Fletcher *et al.*, 2012). Fletcher (2012) also define it as the extent to which a study or tool accurately assess or measures the specific concept that researcher want to measure. In the easier word, validity can be defined as accuracy and the measurement validity is the measurement of accuracy of the questionnaires or tools.

There are several types of measurement validity which are face validity, content validity, criterion validity and construct validity. As stated by Fletcher and Wagner (1996), basically there are three measurement validity types which are content validity, criterion validity and construct validity. They similarly referred as classical validity. Commonly, these three types of validity known as 'three Cs' (Norman and Streiner, 2008). Apart from the three mentioned types of validity, face validity is only describes the technical aspect of the scale.

In this study, the measurement validity of the questionnaires was focused on construct validity in order to assess the accuracy of the questionnaires among childbearing women attending HUSM. Besides, measurement of criterion validity was assessed by measuring correlation between I-QOL and I-PA models. Content and face validity of original model of I-QOL was done by Patrick and friends (1999) while translated version of I-QOL into Malay language and I-PA model had been done by Dariah (2011) from her previous study.

2.6.1 Face Validity

Face validity is not actually a type of validity by definition. It does not indicate that a tool or questionnaire measure what it proposed to measure. In fact, face validity gives some superficial understanding as to how target respondents might understand and respond to the questions by reviewing the aspects of grammar, syntax, organization, appropriateness and logical flow (DeVon *et al.*, 2007). According to Streiner and Norman (2008), face validity concerns with the surface value of the questions. Besides, it is assessment on relevancy of the questions and other aspects of the questionnaires (Norman and Streiner, 2008) (Streiner *et al.*, 2014).

Commonly, the assessment of face validity was done by respondents and not by experts. There are no rules or specific calculation for sample size needed. Generally, sample sizes used for face validity are five to 10 respondents.

Prior development of original I-QOL model, 15 women and five men were interviewed by trained quality-of-life researcher in order to identify I-QOL items based on respond by participants towards the questions proposed in I-QOL module (Wagner *et al.*, 1996). The questions had be asked were derived from a review of relevant socio-medical literature and from the need's-based model of Hunt and McKenna (Wagner *et al.*, 1996). Face validity of translated version of I-QOL model into Malay language had been done by an epidemiologist, a continence advisor, urogynaecologists and obstetricians from Malaysia and Australia (Dariah, 2011). Whereas, Face validity of I-PA model was done among eight female Malay Malaysian postgraduate students in Adelaide, South Australia (Dariah, 2011).

2.6.2 Content Validity

Content validity can be described as how well a measure includes all the facets of an idea or concept which a researcher intends to measure (Fletcher *et al.*, 1996). Ideally, it is a type of validity that focuses on the content of the tool. It also can be defined as the determination of the content representativeness or content relevance of the items in the instrument. Besides, content validity indicated if the items in the tool illustrate the complete range of the element under the study (DeVon *et al.*, 2007).

To demonstrate content validity, opinion from the field's expert about the relevance of the test content to the content of a particular behavioural domain of interest and about the representativeness with which item or task content covers that domain required (Norman and Streiner, 2008). Besides, Streiner and Norman (2008) said that this content validity can be judged on three aspects of relevance, coverage and representativeness. Assessment on these aspects must be done by experts in related area.

However, some theorist do not consider this content validity to be an aspect of validity at all although the content relevance and representativeness do affect the inference that can be drawn from a score (Messick, 1990). Similar to face validity, there are no rules or sample size calculation required for content validity. Usually two to five expert in that field are compulsory.

A group of experts from Malaysia and Australia including an epidemiologist, a continence advisor, two urogynaecologists and obstetricians had reviewed the entire translated version of I-QOL model into Malay language for content validity (Dariah, 2011). Meanwhile, content validity of I-PA model had been done by a group of academics whose related to that area as well as had a strong religious background and worked in a public university in Malaysia (Dariah, 2011).

2.6.3 Criterion Validity

Based on Fletcher and Wagner (1996) as well as Strainer and Norman (2008), criterion validity is a measurement that indicates how well measurement tool correlate with observable phenomenon or a gold standard. There are two types of criterion validity (Norman and Streiner, 2008). They are concurrent validity and predictive validity. Concurrent validity is a correlation or comparison between new instruments with an established instrument. The assessment is measured at the same time or concurrent. While, predictive validity is a correlation between new instruments with an established instrument that only available in the future. The assessment of predictive validity measured at different time interval. In this study criterion validity of concurrent validity had been assessed to observe the correlation between an established instrument of I-QOL model with new developed instrument of I-PA model.

2.6.4 Construct Validity

Carmines and Zeller (1979) state that criterion validity is difficult to establish for abstract concepts, thus construct validity assessment is more appropriate (Carmines and Zeller, 1979). The concept of construct validity was introduced by Cronbach on 1955. Construct validity is an assessment of validation of tool measuring that measure abstract concept (Cronbach and Meehl, 1955). It is "the extent to which a set of measured variables actually represent the theoretical latent construct they are designed to measure" (Hair et al., 2010). Construct validity takes place when researcher believes that his/her instrument reflects a particular construct which contains certain meanings (Cronbach and Meehl, 1955). The word of construct is similar to domain, concept and idea. Hence, construct validity is about the measurement validity of the concept or idea in the proposed instrument. In this study, measurement validity of both instruments of I-QoL and I-PA were assessed via construct validity.

2.6.4a Types of Construct Validity

There are two types of construct validity as suggested by Trochim and Hair which are convergent validity and discriminant validity (Trochim, 2006) (Hair et al., 2010). Convergent validity measures correlation between items from the same construct as well as correlation between constructs. Brown states that convergent validity occurs when items that are meant to measure a construct are correlated to each other. It also happens when related constructs are correlated to each other (Brown, 2006). When the items are correlated, it indicates that the items measure the same thing.

However, when the items are highly correlates, it means that they are measuring the same things (Brown, 2006). When construct from one questionnaire is proven to be correlated to similar construct from other questionnaire, both construct are means to measure the same concept.

On the other hand, discriminant validity happens when items from different constructs are not correlated to each other which mean that the items measure the different concepts (Brown, 2006). It also occurs when a construct is different or uncorrelated to other constructs ((Hair et al., 2010). The assessment of convergent validity and discriminant validity for both modules of I-QoL and I-PA had been assessed under CFA phase to identify the correlation between items as well as correlation between constructs.

Prior the study began, the researcher expected there were convergent validity among items under same construct and discriminant validity among items from different construct. Besides, the researcher predicted there were discriminant validity between constructs of I-QOL model and convergent validity between each construct of I-QOL with construct of I-PA. Hence in future, both questionnaires could be combining under same instrument.