

# EVALUASI PSIKOMETRIK SKALA KUALITAS ASUHAN KEPERAWATAN PADA ANAK DENGAN INFEKSI SALURAN PERNAFASAN AKUT

*(Psychometric Evaluation of the Quality of Nursing Care Scale for Children Hospitalized with Acute Respiratory Infection)*

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## ABSTRAK

**Pendahuluan:** Evaluasi Psikometrik kualitas skala asuhan keperawatan adalah kunci penting dalam meningkatkan kualitas asuhan keperawatan bagi anak yang dirawat di rumah sakit dengan infeksi saluran pernapasan akut (ISPA) untuk menurunkan angka kesakitan dan kematian anak dengan ISPA, terutama di Indonesia. **Metode:** Konstruksi validitas yang diidentifikasi dengan menggunakan eksploratori faktor analisis (EFA), pendekatan kelompok kontras, dan reliabilitas. **Hasil:** Konstruksi validitas: 1) EFA menemukan bahwa QNCS-HARIC terdiri dari 37 item dengan empat faktor dan *total variance explained* dari 42.92% dan *factor loadings* berkisar .30-.70; 2) Pendekatan kelompok kontras menemukan bahwa skor rata-rata dari 37 item QNCS-HARIC antara dua kelompok berbeda secara signifikan ( $t = -22.91$ ;  $p = .000$ ); dan 3) *Cronbach's alpha coefficient* dari total 37 item yang QNCS-HARIC adalah .93. *Cronbach's alpha coefficient* faktor 1, 2, 3, dan 4 dari 37 item QNCS-HARIC masing-masing adalah .87, .80, .77, dan .76. **Diskusi:** Meskipun model 37 item QNCS-HARIC diterima, itu kurang representatif, terutama dalam dimensi sosial-budaya anak dengan ISPA dan keluarga karena hanya terdiri dari 3 dari 10 item yang tidak bisa mengukur dimensi aspek sosio-budaya secara lengkap.

**Kata kunci:** Evaluasi Psikometrik, Skala Kualitas Asuhan Keperawatan, Infeksi Saluran Pernafasan Akut, Anak

## ABSTRACT

**Introduction:** Psychometric Evaluation of the quality of nursing care scale is a vital key to improve the quality of nursing care for hospitalized acute respiratory infection (ARI) children in order to decrease morbidity and mortality of ARI children, especially in Indonesia. **Method:** Construct validity was identified using the exploratory factor analysis (EFA), contrasted group approach, and reliability. **Results:** Construct validity: 1) EFA found that the QNCS-HARIC consisted of 37 items with four factor and total variance explained of 42.92% and factor loadings ranged from .30 to .70; 2) contrasted group approach found that the mean scores of the 37 items QNCS-HARIC between two groups were significantly different ( $t = -22.91$ ;  $p = .000$ ); and 3) Cronbach's alpha coefficient of the total 37 item QNCS-HARIC was .93. Cronbach's alpha coefficients of Factor 1, 2, 3, and 4 of the 37 item QNCS-HARIC were .87, .80, .77, and .76, respectively. **Discussion:** Although the 37 items QNCS-HARIC model was acceptable, it was less representative, especially in the socio-cultural dimension of ARI children and family because it consisted of only 3 from 10 items which could not measure the complete dimension of the socio-cultural aspect.

**Keywords:** Psychometric Evaluation, Quality of Nursing Care Scale, Acute Respiratory Infection, Children

## INTRODUCTION

One possible way to reduce the morbidity and mortality of acute respiratory infection (ARI) children and increase quality of nursing care of ARI children is to develop a scale to evaluate quality of nursing care for hospitalized ARI children. The scale development will be based on the related concepts such as quality of nursing care, holistic care, nursing process, and holistic nursing care for ARI children.

Quality of nursing care is measured by patients' met needs in terms of physical, psychosocial, socio-cultural, and spiritual aspects as well as patient satisfaction with the care (Kunaviktikul, W, Anders, RL, Srisuphan, W, Chontawan, R, Nuntasupawat, R &

Pumarporn 2001). Quality of nursing care as the degree to which patients' physical, psychosocial, and extra care needs were met (Williams 1998). Nurses' response to patients' needs would be used as an indicator for quality of nursing care and categorized the quality of nursing care indicators into three groups: structure, process, and outcome, which are related to the structure, process, and outcome of care (Donabedian, 1997). The structure indicators were divided into four categories: 1) management, 2) facility, 3) resources, and 4) staff development (Kunaviktikul, W, Anders, RL, Srisuphan, W, Chontawan, R, Nuntasupawat, R & Pumarporn 2001). The process indicators were divided into two categories: 1) nursing practice and 2) professional characteristics (Kunaviktikul, et

al. 2001). The outcome indicators were divided into six categories: 1) incidents and complications, 2) patient satisfaction, 3) satisfaction with information, 4) time, 5) satisfaction with pain management, and 6) satisfaction with symptom management (Kunaviktikul, et al 2001). In this study, the quality of nursing care for ARI children will be defined as the degree to which pediatric nurses provide nursing care to meet the needs of ARI children in the physical, psychological, social-cultural, and spiritual dimensions. Thus, one process indicator, namely nursing practice, will be implied as an indicator used to measured quality of nursing care for ARI children.

Based on a literature review of studies from 1990 to 2010, no known quality of nursing care scale for hospitalized ARI children was found. However, one study used the concept of holistic care and nursing process (Lee, LL, Hsu, N & Chang 2007) to evaluate the quality of nursing care in orthopedic units. The nursing process and four aspects of holistic care, including physiological, psychological, socio-cultural, and spiritual aspects, were used as the conceptual framework to evaluate the quality of nursing care in orthopedic patients. Other related studies were found in various populations. Lynn, McMillen, and Sidani (2007) developed an instrument to measure nurses' evaluation quality of patient care delivery in acute care setting, in the United States. They found that the components of quality of nursing care consisted of the following factors: interaction, vigilance, individualization, advocate, work environment, unit collaboration, personal characteristics, and mood. Murphy ( 2007) explored nurses' perceptions of the attributes of quality of care and the factors that facilitate or hinder high quality nursing care in long-term care in Ireland. The findings indicated that nurses perceived quality of care for older people in Ireland as holistic, individualized and focused on promoting independence and choice.

From the overview of the literature review, it was found that these previous studies measured quality of nursing care in general were not specific to ARI children. The definition of quality of nursing care for nurses who work with ARI children has not been identified in the nursing literature. Most of the studies were conducted with the different setting and diseases, and also offered the meaning/definition of quality of nursing care based on nurses in western countries.

The complexity, subjectivity, and multidimensional concept of quality of nursing care is difficult to be defined and measured (Attree 1996; Kunaviktikul, W, Anders, RL, Srisuphan, W, Chontawan, R, Nuntasupawat, R & Pumarporn 2001; Norman, IJ, Redfern, SJ, Tomalin, DA & Oliver 1992). In addition, the issue related to measurement of quality of pediatric nursing care is usually associated with the lack of definition and evaluation of the concept of quality of care (Leino-Kilpi, H & Vuorenheimo 1994; Pelander 2008; Suhonen, R & Valimaki 2003). The other problem is that there are few instruments developed especially for evaluating the quality of pediatric nursing care. Furthermore, in Indonesia, the quality of nursing care of children is the main issue in Indonesian hospitals. The fifth target goal of the national development plan of Indonesia is to reduce the under-five child mortality rate by two thirds from 1990 to 2015 ( MDGs-Indonesia, 2008). The Indonesian under-five child mortality rate in 1990 was 57/1000 live births and by 2015, this number should be reduced to 38/1000 live births to achieve the target (Hernani, Sudarti, Agustina 2009) (The under-five child mortality rate in 2005 was 38/1000 live births (Government of Indonesia, 2005) and the major contributor was ARI (MDGs-Indonesia, 2008)

The quality of nursing care is the main concern in a health care setting because of its impact on safety, incidence of pneumonia, length of stay, and mortality rate. Also, low nurse performance related to high morbidity and mortality incidence rate of children is a major concern in Indonesia, (Hennessy, D, Hicks, C, Hilan, A & Kowanal 2006). Related to this matter, development and evaluation of the quality of nursing care scale is a vital key to improve the quality of nursing care for hospitalized ARI children in order to decrease morbidity and mortality of ARI children, especially in Indonesia. This scale can used as a guideline for pediatric nurses to assess the quality of nursing care for ARI children, to provide the high quality standard of ARI nursing care, and also to identify the strength and weakness in the delivery of nursing care.

## **MATERIAL AND METHOD**

Psychometric Evaluation of the Quality of Nursing Care Scale for Hospitalized Acute Respiratory Infection Children consisted of 1)

administer the items to the development sample, 2) evaluate the items, and 3) optimize scale length (DeVellis 1991).

The QNCS-HARIC is formulated on the basis of the feedback and data received from the development of the quality of nursing care scale for hospitalized acute respiratory infection children of DeVellis process, the researcher administered the demographic data questionnaire, the QNCS-HARIC, and the MCSDS-C to 779 pediatric nurses at 39 pediatric wards from general hospitals in Indonesia. This was done in order to test for internal consistency and stability of the questionnaire. After receiving the questionnaires back, construct validity were performed using exploratory factor analysis (EFA) and the contrasted group approach. Reliability was performed both internal consistency and stability.

Purposive sampling was used to recruit nurses who met the inclusion criteria. The inclusion criteria includes 1) pediatric nurses who have provided nursing care to ARI children (age under-five) for at least 1 year, 2) are willing to participate in this study, and 3) are able to communicate in Indonesian language. Casey, Fink, Krugman, and Propst (2004) found that graduate nurses felt that it took at least 12 months to feel comfortable and confident practicing in the acute care setting.

An exploratory factor analysis was conducted with 779 pediatric nurses using the principle axis factoring (PAF) extraction with varimax rotation. The data from the QNCS-HARIC was assessed for reliability (e.g., internal consistency and stability), factor structure (EFA), and a contrasted group for construct validity evaluation. In addition, the MCSDS-C will be used to examine for social desirability response bias affecting the validity of a questionnaire by using Pearson's product-moment correlation coefficient.

## RESULTS

Construct validity was identified using the EFA and contrasted group approach. The reliability was evaluated in terms of internal consistency (Cronbach's alpha) and stability (test-retest). The results of psychometric evaluation of the validity and reliability of the QNCS-HARIC are as follows.

### Construct validity of the QNCS-HARIC

Before performing EFA, all assumptions of EFA were examined. The assumptions of EFA consisted of type of data,

sample size, normality, linearity, outliers, and multicollinearity. The details of assumptions for EFA are as follows.

EFA requires an interval level of measurement. The QNCS-HARIC has items that are assessed using a Likert scale. Although the response categories in Likert scales have a rank order and should be viewed as ordinal-level measurement, it has become common practice to assume that Likert-type categories constitute interval-level measurement as well as the intervals between values are equal.

The sample size should be at least 1 to 10 cases per variable. In this study, the QNCS-HARIC consisted of 77 variables. Thus, sample size should be 770. Data were available initially from 807 pediatric nurses with no missing data and 1: 10.48 cases per variable. After deleting 28 outliers, the sample size was 779 and 1:10.1 cases per variable. Thus, this assumption was met.

The distribution of the 77 variables was examined for each item looking at skewness and kurtosis values. All 76 variables were normally distributed, except variable 70 which had a kurtosis value of 3.78. The box plot was used to detect outliers. After deleting the outliers item 70 had a normal distribution. The skewness values varied from 0.00-3.12, while the kurtosis values ranged from 0.51-3.26. Thus, this assumption was met.

Linearity was assessed through inspection of scatter plots. The scatter plots of the residual against the predicted values provide information about possible non linearity. The scatter plots showed a positive linear relationship with all linear correlation. Thus, this assumption was met.

Factor analysis is sensitive to outlier cases. Outliers were assessed using boxplots and Mahalanobis distance. Using a criterion of  $p$ -values equals to .001 with 77 df, critical  $X^2 = 121.11$ . Twenty five outliers were found. The researcher re-evaluated the variables several times until no outliers were detected by checking the boxplots and calculating Mahalanobis distances.

Multicollinearity was detected using correlation matrices for the independent variables. In this study, multicollinearity was not found ( $r=.30-.82$ ). Thus, this assumption was met.

### Demographic data of pediatric nurses

Seven hundred and seventy-nine pediatric nurse participants were involved in this study. Most of the pediatric nurses were female (90.9%). Their ages ranged from 25 to

48 years old and about less than fifty percent of them (44.3%) were an average of 30 to 40 years old ( $Md = 35$ ,  $QD = 6$ ). The majority of the participants were Muslim (73.8%) and one hundred ninety eight participants were Christian (25.4%). The majority of the participants were married (78.7%). All participants had a bachelor degree (100%). More than fifty percent of the participants (60.6%) had more than six years of nursing experience ( $Md = 10$ ,  $QD = 6$ ). Less than fifty percent of the participants (41.8%) had more than six years of working experience with acute respiratory infection children ( $Md = 6$ ,  $QD = 3.5$ ). Less than fifty percent of the participants (41.1%) took care of ARI children more than 10 cases per month ( $Md = 10$ ,  $QD = 3$ ).

Before performing an EFA, an item analysis (an item-total correlation) was conducted. The results showed that 28 items had low item-total correlations, ranging from .02 to .29 indicating that the items might be less consistent and less reliable to reflect the construct when compared with other items in the 77 item QNCS-HARIC. Therefore, nine items were eliminated from 77 item QNCS-HARIC. However, based on theoretically interpretation, 19 of 28 items were retained. Thus, 68 items were used to perform the EFA.

The item-total correlations coefficients for Factor 1 of the 77 item QNCS-HARIC ranged from .04 to .54 whereas those of the 68 item QNCS-HARIC ranged from .11 to .62. The item-total correlations coefficients for Factor 2 of the 77 item QNCS-HARIC ranged from .02 to .62 whereas those of the 68 item QNCS-HARIC ranged from .04 to .62. The item-total correlations coefficients for Factor 3 of the 77 item QNCS-HARIC ranged from .33 to .55 whereas those of the 68 item QNCS-HARIC ranged from .22 to .55. The item-total correlations coefficients for Factor 4 of the 77 item QNCS-HARIC ranged from .09 to .58 whereas those of the 68 item QNCS-HARIC ranged from .08 to .60.

To determine the number of factors underlying the QNCS-HARIC, an exploratory factor analysis was conducted with 779 pediatric nurses using the principle axis factoring (PAF) extraction with orthogonal rotation by using varimax method. In this study, EFA was performed several times with the 77 item QNCS-HARIC. The final model consisted of 37 items. Before interpretation of the results, the model fits of the 77 and 37

items QNCS-HARIC were identified. Kaiser-Meyer-Olkin (KMO) indices of both models were satisfactory (.85-.86). Bartlett's tests of sphericity were significant. The Eigenvalues showed in 4 to 22 factors and scree test showed 3-4 factors. The percentage of total variance explained was acceptable only for the model of 37 item QNCS-HARIC (40.92%). The percentages of variance explained per factor were acceptable only for the model of 37 item QNCS-HARIC. Based on the model fit evaluation, only the 37 item QNCS-HARIC model was acceptable.

Factors, items and factor loadings were interpret only the 37 items QNCS-HARIC because it had a model fit. Based on the 37 item QNCS-HARIC consisted of 4 factors. Factor 1 The physical dimension of ARI children consisted of 14 items. The factor loading of all items of Factor 1 were acceptable and significant (varied from .33 to .79,  $p = .000$ ). The communalities of all items of Factor 1 were acceptable (varied from .25 to .74). In Factor 2, the psychological dimension of ARI children and family consisted of 15 items. The factor loadings of all items were acceptable and significant (varied from .33 to .79,  $p = .000$ ). The communalities of all items were acceptable (varied from .30 to .58). Factor 3, the socio-cultural dimension of ARI children and family consisted of 3 items. The factor loadings of all items were acceptable and significant (varied from .33 to .55,  $p = .000$ ). The communalities of all items were acceptable (varied from .42 to .56). In Factor 4, the spiritual dimension of ARI children and family consisted of 5 items. The factor loadings of all items were acceptable and significant (varied from .54 to .75,  $p = .000$ ). The communalities of all items were acceptable (varied from .41 to .64).

### Results from contrasted group approach

The independent t-test was used to examine the construct validity of the 77 and 37 item QNCS-HARIC with nurses who had work experience with ARI children less than six years (Group 1,  $n = 271$ ) and nurses having work experience six years or more (Group 2,  $n=508$ ). Before testing, all assumptions of independent t-test were assessed and were met. The results showed that the mean scores of the 77 and 37 item QNCS-HARIC of nurses who had work experience six years or more were significantly higher than those of nurses who had work experience less than six years.

### Results from internal consistency

Cronbach's alpha coefficient of the total 77 items QNCS-HARIC was .92 whereas that of the 37 item QNCS-HARIC was .93. Cronbach's alpha coefficients of Factor 1, 2, 3, and 4 of the 77 item QNCS-HARIC were .85, .79, .77, and .76, respectively whereas those of the 37 item QNCS-HARIC were .87, .80, .77, and .76, respectively. The internal consistency of all two versions of the QNCS-HARIC were acceptable.

### Results from test-retest reliability

Before performing a test-retest reliability, all assumptions of Pearson Product Moment Correlation were examined and were met. Test-retest was administered twice within a 2 week interval between the tests to two groups of pediatric nurses. The results revealed that the mean score of the 77 item QNCS-HARIC measured at Time 1 was positively significant and highly correlated with that of measured at Time 2 ( $r = .75$ ). The mean scores of each dimension measured at Time 1 also were positively significant and highly correlated with those of measured at Time 2 ( $r = .78, .77, .73, \text{ and } .81$ ). These high correlations indicate that the instrument is stable over time.

### Results from social desirability

Before performing social desirability testing, all assumptions of Pearson Product Moment Correlation were examined and were met. The results revealed that the overall mean scores of the 77 items QNCS-HARIC did not significantly correlate with the mean score of social desirability ( $r = .07, p = .06$ ) whereas that of the 37 item QNCS-HARIC did significantly correlate with mean score of social desirability ( $r = .08, p = .02$ ). For each dimension/factor of the 77 item QNCS-HARIC, the mean scores of Factor 1 (Physical dimension of ARI children), Factor 2 (Psychological dimension of ARI children and family), and Factor 4 (Spiritual dimension of ARI children and family) did not significantly correlate with that of the social desirability ( $r = .06, p = .12; r = .07, p = .07; r = .04, p = .33$ , respectively) whereas the mean score of Factor 3 (Socio-cultural dimension of ARI children and family) significantly correlated with that of the social desirability ( $r = .07, p = .05$ ). For each dimension/factor of the 37 item QNCS-HARIC, the mean scores of Factor 1 (Physical dimension of ARI children)

and Factor 4 (Spiritual dimension of ARI children and family), did not significantly correlate with that of the social desirability ( $r = .01, p = .75; r = .02, p = .61$ , respectively) whereas the mean scores of Factor 2 (Psychological dimension of ARI children) and Factor 3 (socio-cultural dimension of ARI children and family) significantly correlated with that of the social desirability ( $r = .10, p = .01; r = .17, p = .00$ , respectively).

## DISCUSSION

### Exploratory factor analysis

An exploratory factor analysis was conducted with 779 pediatric nurses using the principle axis factoring (PAF) extraction with varimax rotation. The PAF extraction was chosen because it is the best method of extraction in EFA for non-normality distributed data (Fabrigar, LR, Wegener, DT, MacCallum, RC & Strahan 1999). PAF will give researcher the best results, depending on whether the data are generally normally-distributed or significantly non-normal, respectively (Costello, AB & Osborne 2005). The varimax rotation method was chosen because when using varimax rotation, rotated matrix is interpreted after orthogonal rotation and to maximize the factor coefficient for each variable on only one factor (Weiner, IB, Schinka, JA & Velicer 2012)

Based on the item analysis of 77 item QNCS-HARIC revealed that twenty-eight items had item-total correlation less than .30. The item-total correlation is a reflection of how well items measure what they are intended to be measured. Correlations should be range from .30 to .70 (Nunnally & Bernstein, 1994). Correlations that exceed .70 suggest item redundancy, while correlations less than .30 suggest the item is measuring an entirely different construct. According to Ferketich (1991), a low item-total correlation is less likely to correlate with other items to form factor in factor analysis.

The unexpected results of the EFA occurred with the 77 items QNCS-HARIC. Although almost all of the criteria for the model fit of the 77 item QNCS-HARIC were satisfactory, the total variance explained was only 32.11%. According to Scherer, Wiebe, Luther, and Adams (1988), the total variance explained for new instrument should be at least 40%. In this model, the total variance

explained was only 32.11% and thus indicates an unsatisfactory.

To pursue a distinguishable and interpretable solution with sound psychometric evaluation for the QNCS-HARIC, the researcher re-examined each item, assigned items to each factors according to the criteria for determining the number of factors included using the following: item-total correlation at least .30 (Nunnally, JC & Bernstein 1994), reliability of each factor at least .70 (DeVellis 1991), eigenvalues should be equal or more than 1 (Hair et al., 1998), scree test criterion should be the data points above the break (Tabachnick, BG & Fidell 2007), percent of total variance explained at least 40% or more (Scherer, RF, Wiebe, FA, Luther, DC, & Adams 1988), percentage of variance should be equal or more than 5% of variance explained (Hair, JF, Anderson, RE, Tatham, RL & Black 1998) factor loading at least .30 (Hair, JF, Anderson, RE, Tatham, RL & Black 1998), and had theoretical interpretability of the item (Hair, JF, Anderson, RE, Tatham, RL & Black 1998) After item reduction was completed, the number of items was reduced from 77 to 37.

Four factors were obtained from 37 items, which extracted 42.92% of the total variance explained. Scherer, Wiebe, Luther, and Adams (1988) state that the variance explained between 40% and 60% is considered sufficient in social sciences. In this model, the total variance explained was 42.92% which indicated that it was sufficient for a newly development instrument. The KMO was .86 and is acceptable (Hair, JF, Anderson, RE, Tatham, RL & Black 1998). Bartlett's test of sphericity was significant ( $p = .000$ ) indicating the suitability of the sample for factor analysis (Hair et al., 1998). The eigenvalue for the first factor was 8.25; the second factor eigenvalue was 3.08; the third factor eigenvalue was 2.50, and the fourth factor eigenvalue was 2.05, and since they were all greater than 1.0 indicate a good fitting model (Hair, JF, Anderson, RE, Tatham, RL & Black 1998) Factor loading of all items were acceptable (varied from .30 to .70), indicating that the model fit was acceptable. In this model, all items had communalities greater than .20 indicating an acceptable fit and all items were retained.

Although the 37 items QNCS-HARIC model was acceptable, it was less representative, especially in the socio-cultural dimension of

ARI children and family because it consisted of only 3 from 10 items which could not measure the complete dimension of the socio-cultural aspect. Based on the conceptual framework, the researcher expected that the quality of nursing care for acute respiratory infection children consisted of four dimensions. However, few items of the the socio-cultural dimension of ARI children and family were loaded on Factor 3, probably due to an unequal number of initial items between Factor 3 and the others 3 factors. According to Mroch and Bolt (2003), the number of items per dimension is manipulated such that a test contains either the same number of items per dimension, or varying numbers of items per dimension. If there are an equal number of items per dimension, each dimension will have an equal proportion. Thus, further study is needed to revise and balance the items in each dimension of the QNCS-HARIC.

When performing the contrasted group analysis, the overall mean scores of the 77, and 37 items of the QNCS-HARIC of the nurses who had six or more years of work experience with ARI children were significantly higher than those of the nurses having work experience with ARI children for less than six years. This indicated that the construct measured by all 2 versions of the QNCS-HARIC could be distinguished between groups with extremely different characteristics (Polit, DF & Beck 2004; Waltz, CF, Strickland, OL & Lenz 2005) Therefore, the researcher may claim some evidence for construct validity that is the instrument measures the attribute of interest (Waltz, CF, Strickland, OL & Lenz 2005). The pediatric nurses who had more work experience with ARI children would provide better quality of nursing care to ARI children and family.

### Reliability

The internal consistency of total 77 and 37 item versions of the QNCS-HARIC was excellent (Cronbach's alpha coefficients .92, .93, respectively). Cronbach's alpha coefficients of 77 and 37 items QNCS-HARIC for Factor 1 (Physical dimension of ARI children) were very good (.85, .86, respectively); Factor 2 (Psychological dimension of ARI children and family) were acceptable (.79) and very good (.81), respectively; Factor 3 Social-cultural dimension of ARI children and family were acceptable (.77, .77,



respectively); and Factor 4 (Spiritual dimension of ARI children and family) were acceptable (.76, .76, respectively). This indicated that internal consistency of total 77 and 37 items of the QNCS-HARIC were acceptable. In general, a Cronbach's alpha of at least .70 is the criterion used to establish an acceptable level of internal consistency (Nunnally, JC & Bernstein 1994). A strong Cronbach alpha coefficient scale provides useful information about the internal structure of the scale indicates that the items in the scale are quite correlated with each other (Worthington, RL & Whittaker 2006) Furthermore, the evidence of reliability is very important in the development of research as far as scale increases confidence that the items on the scale that produces consistent scores.

For the test-retest of the 77 items of the QNCS-HARIC, total mean scores from administering the QNCS-HARIC on two separate occasions (two weeks apart) gave a correlation coefficient equaled to .75, ( $p < .001$ ) indicating that the instrument is stable over time (DeVon, et al 2007) Unfortunately, the test-retest was not performed with the 37 item of the QNCS-HARIC. Further performing the test-retest reliability with 37 item QNCS-HARIC is needed.

### **Social Desirability**

The overall mean score of the 77 item QNCS-HARIC did not significant correlate with that of the social desirability whereas the overall mean score of the 37 items of the QNCS-HARIC significantly correlated with that of the social desirability. All mean scores of all dimensions of the 77 item QNCS-HARIC did not significantly correlate with that of the social desirability except the mean score of Factor 3 Socio-cultural dimension of ARI children significantly correlated with that of the social desirability ( $r = .07, p = .05$ ). For 37 item QNCS-HARIC, the mean scores of Factor 2 and Factor 3 significantly correlated with that of social desirability whereas the other two factors did not.

Non-significant correlation indicates that social desirability is not a factor affecting the participants' response to the instrument (Crowne, DP, & Marlowe 1960) The results of non-significant correlation of these two measures were similar to the study of Konggumnerd, Isaramalai, Suttharangsee, and Villarruel (2009) developed a scale to

measure sexual health protective behavior in Thai female adolescents and to examine its psychometric properties. The results indicated that there was no significant correlation between the mean scores of the Sexual Health Protection Scale and the Marlow-Crowne Social Desirability Scale, which means that participants answered the Sexual Health Protection Scale without social desirability bias.

In contrast, a significant correlation indicates that that social desirability is a factor affecting the participants' response to the instrument (Kassam, A, Papish, A, Modgill, G & Patten 2012) . The results of significant correlation of these two measures were similar to the study of Sriratanaprat, Chaowalit, and Suttharangsee (2012) which was developed and determined the psychometric properties of the Job Satisfaction Scale for Thai Nurses (TNJSS). The results revealed that the correlation coefficient between social desirability and the TNJSS was small ( $r = .12, p < .01$ ) and significant probably due to large number of subjects ( $N = 963$ ) (Sriratanaprat, J, Chaowalit, A & Suttharangsee n.d.) In this study, the sample size also was large ( $N = 779$ ). Paulhus (1991) suggested that researchers should try to reduce social desirability by employing representative subjects. Another way, the researcher could administer the Marlowe-Crowne scale to identify individuals who tend to respond in a socially desirable way and eliminate them from the studies. No design, of itself, can control for motivation and response bias factors. Further study, the researcher should use some strategies for minimizing social desirability including: 1) using do guess directions when multiple-choice measures are employed, 2) wording directions as clearly and concisely, 3) avoiding items formats that use fixed-response, 4) using items with a general rather than a personal difference, and 5) avoiding any words or actions that might communicate to subjects that the investigators would give certain responses (Waltz, Srickland, & Lenz, 2005).

## **CONCLUSION AND RECOMMENDATION**

### **Conclusion**

The 37 items the QNCS-HARIC is not representative and cannot capture the socio-cultural dimension of ARI children because the number of items is few.

## Recommendation

Further research is needed to revise and balance the items in each dimension of the QNCS-HARIC.

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