

Adaptation and Validation of the Indonesian Version of Attitudes toward Sexuality Questionnaire in Individuals with Intellectual Disability (ASQ-ID)

Hardian Hardian^{1,2}, Tanjung Ayu Sumekar^{1,3}, Agustini Utari^{4,5} and Tri Indah Winarni^{4,*}

¹Department of Physiology, Faculty of Medicine, Universitas Diponegoro, Semarang, Central Java, Indonesia

²Biomedical and Clinical Epidemiology Unit, Faculty of Medicine, Universitas Diponegoro, Semarang, Central Java, Indonesia

³Department of Psychiatry, Faculty of Medicine, Universitas Diponegoro, Semarang, Central Java, Indonesia

⁴Center for Biomedical Research (CEBIOR), Faculty of Medicine, Universitas Diponegoro, Semarang, Central Java, Indonesia

⁵Department of Pediatric, Faculty of Medicine/dr. Kariadi Hospital, Universitas Diponegoro, Semarang, Central Java, Indonesia

Abstract: *Background:* Sexuality is an integral part of adult human life, including for individuals with a disability. Even though sexuality is a fundamental right of human life, however, for a person with an intellectual disability, expressing and exploring sexuality is limited. This study aimed to determine the reliability and validity of ASQ-ID in the Indonesian language.

Methods: A cross-sectional observational study designed for adaptation and validation of the Attitudes toward Sexuality Questionnaire in Intellectual Disability (ASQ-ID) of the Indonesian version was conducted in 2019. The study subjects were 617 students of Universitas Diponegoro, Indonesia. The translation process was composed of 5 steps: translation, synthesis, back translation, and semantic and conceptual analysis testing. Exploratory Factor Analysis (EFA) with principal component analysis (PCA) as a method of extraction and varimax rotation was used to identify the structure/dimensionality of observed data and identify clusters of inter-correlated variables. Pearson's r-correlation test was used to evaluate the correlation between the original and Indonesian adaptation of ASQ-ID. Cronbach-alpha was computed across all factors/sub-scales to examine the internal consistency of the adapted questionnaire.

Results: Reliability analysis showed Cronbach alpha and composite reliability of items of the Indonesia version of ASQ-ID was high. EFA analysis revealed 7 emerging factors and 28 items of solutions. The items were re-group into 4 sub-scales based on the original ASQ-ID sub-scales.

Conclusion: The Indonesian version of ASQ-ID has high validity and reliability in measuring the attitudes toward sexuality in individuals with ID.

Keywords: Attitudes to sexuality, intellectual disability, reliability, validity.

INTRODUCTION

Sexuality is an integral part of adult human life, including for individuals with a disability. Even though sexuality is a fundamental right of human life, however, for individuals with intellectual disabilities (ID) experience limitations in sexual expression and access to sexuality. Disabled individuals are sexual beings who deserve equal sexual and reproductive rights, including parenting, expressing non-reproductive sexual behavior, and self-control over choices and managing intimate relationships throughout their lives [1]. In Western countries, social policies have been introduced to promote the acceptance of individuals with ID into social life, including sexual and intimate

rights. It leads to the acceptance of sexual behavior in adults with an ID that is more favorable. However, the attitudes toward some aspects of sexuality remain controversial [2, 3]. On the contrary, in Eastern countries, an attitude toward sexuality in individuals with ID is found generally be more conservative and still faces a stigma, which involves discrimination, prejudice, and exclusion, such as restricted access to leisure and social activities [4-7].

Indonesia is a religious country with the largest Muslim population in the world [8]. Islam views sexuality positively, which recognizes sexuality as part of human nature, but should only be fulfilled in the institution of marriage, as marriage is the only institution to have sexual intimacy and intercourse legally. Despite many modernization changes in Islam belief in Indonesia, the traditional norm on sexuality is still dominant [9]. Indonesian population has strong

*Address correspondence to this author at the Center for Biomedical Research (CEBIOR), Faculty of Medicine, Diponegoro University, Jl. Prof. H. Soedarto, SH, Tembalang, Semarang 50275, Central Java, Indonesia; Tel/Fax: +62 248454714; E-mail: triwinarni@lecturer.undip.ac.id, triindahw@gmail.com

religious and cultural beliefs that may differ from Western countries on attitudes toward sexuality in individuals with ID, especially regarding sexual and reproductive rights [10]. In a previous study in the US, where the population has strong cultural and religious beliefs, the attitudes were more conservative. Cultural orientation is a strong predictor of attitudes. The horizontal cultural orientation (valuing equality) population has been approved to have more positive attitudes compared to the vertical cultural orientation population (emphasizing hierarchy) [11]. Individuals who share a particular religious tradition and strongly commit to religion tend to have more negative attitudes [12].

Studies about attitudes toward sexuality in individuals with ID in Indonesia are rare. Besides sexuality matter is still considered a taboo topic, the lack of instruments to measure attitudes toward the sexual expression of individuals with ID specific to Indonesian people has not existed yet. Previous studies yield that attitudes towards sexuality in individuals with ID in Indonesia are still conservative and influenced by religious beliefs. Some statements in the questionnaire are considered religiously sensitive and may affect study participants' answers [10]. Currently, a study was done among public health undergraduates and found varying attitudes towards sexuality in individuals with ID, where medical and psychology students have more favorable attitudes compared to public health students. Consistent with the previous study, this study also found the role of religion in the non-reproductive sexual behavior subscale [13].

Cuskelly and Bryde have developed an instrument to measure attitudes to the sexual expression of individuals with ID, named Attitudes toward Sexuality Questionnaires in Intellectual Disability (ASQ-ID) [14]. The instrument is composed of 4 subscales: sexual rights (13 items), parenting (7 items), non-reproductive sexual behavior (5 items), and self-control (3 items). Each item's responses are scored on a 6-point Likert scale, with higher scores indicating more positive or accepting attitudes. Internal consistency of the subscales in the questionnaire ranged from 0.67 to 0.93. Correlational analysis showed that all 4 subscales were significantly correlated [2]. However, the development of sexual expression instruments was done by parents of individuals with ID, support staff who work with individuals with ID, and the general community in Australia. Australia is a developed country with a different culture, religion, and social environment than Indonesia. However, Australia is

labeled a successful multicultural country by accepting immigration as a national policy [15]. Cultural and religious norms and beliefs, social environment, education, and sexual experience are believed to have a critical impact on sexual attitudes besides gender, age, and familiarity [13, 16, 17]. Besides, the various aspects that may affect attitudes toward sexuality in individuals with ID were concluded to be a heterogeneous result worldwide [17]. Therefore, extensive study is needed to determine the acceptance of the sexual expression of individuals with ID. In conjunction with this issue, this study aimed to determine the reliability and validity of the Indonesian language of ASQ-ID.

MATERIAL AND METHODS

Study Design and Participants

A cross-sectional observational study designed to adapt and validate the ASQ-ID to the Indonesian version was conducted in 2019. About 3355 active undergraduate students (977 medical students, 890 psychology students, and 1488 public health students) of Universitas Diponegoro, Semarang, Central Java, Indonesia, were targeted to participate in an online survey that subsequently was aimed to adapt and validation of the ASQ-ID. During four months, 617 students (256 medical, 160 psychology, and 201 public health students) completed the questionnaires. The response rate was 18.4%. The secondary data was obtained from a previous study [13].

Ethical Consideration

Ethical approval was obtained from the Health Research Ethics Committee of the Faculty of Medicine, Universitas Diponegoro, Semarang, Central Java, Indonesia (Approval No. 201/EC/KEPK/FK-UNDIP/V/2019) before data collection. Students freely answered or declined the survey, and there was no consequence for students who declined to participate in the study.

Translation Procedures

The translation process was composed of 5 steps, i.e., step 1: translation from English to Indonesian; step 2: synthesis; step 3: back translation from Indonesian to English; step 4: analysis from semantic and conceptual equivalence; and step 5: testing the adapted questionnaire. The ASQ-ID questionnaire was translated from English to Indonesian and from Indonesian to English by certified translators.

Data Collection

As previously described in a study by Evlyn *et al.* 2021, an online version of the ASQ-ID was shared by student representatives with all active undergraduate students admitted in 2016–2019. Students who agreed to participate in this study signed (electronically) a consent form before completing two sets of online ASQ-ID, which consists of questions on attitudes toward the sexuality of adult males and females with ID [13].

Statistical Analysis

Descriptive analysis to measure central tendencies such as mean, standard deviation, and frequency, the proportion was carried out to evaluate the research data. Exploratory Factor Analysis (EFA) with principal component analysis (PCA) as the method of extraction and varimax rotation was used to determine the questionnaire construct validity. EFA was used to identify the structure/dimensionality of observed data and identify factors/sub-scales of inter-correlated variables. Pearson's *r* correlation test was conducted to evaluate the correlation between the original and adaptation of the ASQ-ID questionnaire. Cronbach-alpha was computed across all factors/sub-scales to examine the internal consistency of the adapted questionnaire. The value of $p < 0.05$ was considered significant.

RESULTS

All participants answered all questions in the questionnaire within 13-15 minutes and had no unanswered questions. Therefore the face validity of the Indonesian language ASQ-ID was acceptable.

Participants Characteristics

Participants' characteristics are shown in Table 1. Female participant number was significantly higher than male ($\chi^2=190,679$, $df=1$, $p<0.001$). The mean age was 20.2 ± 1.21 years, and the number of age categories < 21 years was significantly higher than ≥ 21 years ($\chi^2=28,669$, $df=1$, $p<0.001$). The mean age of males was significantly higher than females ($Z= -3.013$, $p=0.003$). Religions of participants mostly were Islam ($\chi^2=1658,964$, $df=5$, $p<0.001$). Most participants had influence by religion on decision making ($\chi^2=359,548$, $df=1$, $p<0.001$) and no family history of intellectual disability was found ($\chi^2=446,718$, $df=1$, $p<0.001$). Attitudes towards sexuality among participants who have a family member with ID were found not

significantly different compared to participants who have no family member with ID ($p>0.7$).

Table 1: Participants Characteristics

Characteristics	Mean \pm SD or n (%)
Gender	
Male	137 (22.2%)
Female	480 (77.8%)
Age (years)	20.2 ± 1.21
Age categories	
< 21	375 (60.8)
≥ 21	242 (39.2)
Age according to gender (years)	
Male	20.5 ± 1.38
Female	20.1 ± 1.14
Religions	
Islam	474 (76.8)
Christian	82 (13.3)
Catholics	51 (8.3)
Buddhist	6 (1.0)
Hindu	2 (0.3)
Other	2 (0.3)
Influence of religion on decision making	
Yes	544 (88.2)
No	73 (11.8)
Family history of intellectual disability	
Yes	46 (7.5)
No	571 (92.5)

ASQ-ID Validity

Factorial validity was observed through principal components analysis (PCA). Before EFA, the Kaiser-Meyer-Olkin test and Bartlett's test of sphericity were conducted to evaluate the factorability. The KMO measure of sampling adequacy was 0.863, and Bartlett's Sphericity Test ($\chi^2(378) = 7710.335$; $p < 0.001$), the sample was shown to be adequate for factor analysis.

EFA was conducted to extract the new factor structure and to examine the construct validity. The principal component analysis method was used as the extraction method, and varimax rotation was performed. The number of factors was decided considering the scree-plot, cumulative variance explained, interpretability, and Kaiser's criterion.

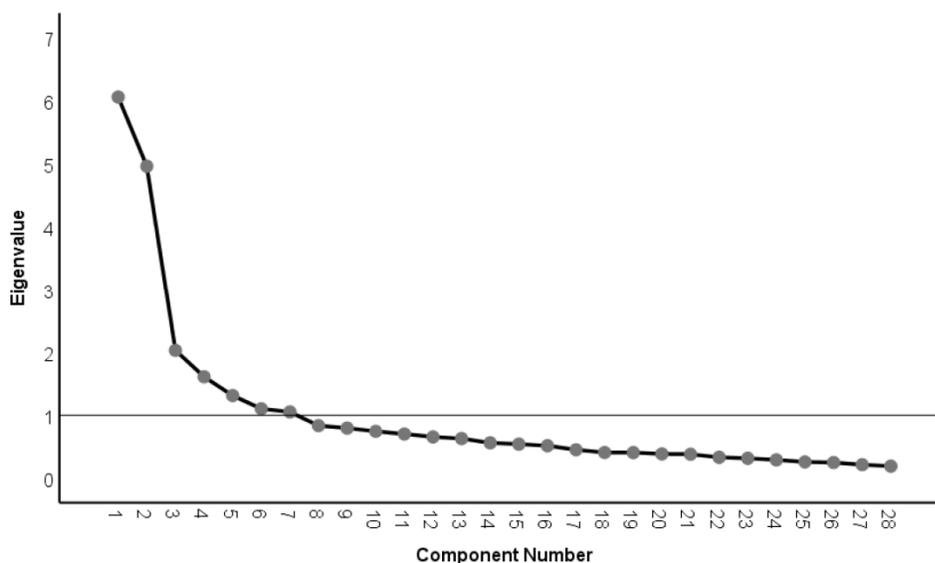


Figure 1: Scree plot of factor analysis of the Indonesian version of the ASQ-ID questionnaire.

EFA with PCA and varimax rotation extracted 7 factors and found the eigenvalues greater than 1 in 28 items. The scree plot (Figure 1) shows that the breakpoint occurred after the seventh factor when the eigenvalue of factors dropped below 1. The total variance explained with eigenvalues above 1 was 64.771%.

Factor analysis of the pattern matrix of the Indonesian version of ASQ-ID is shown in Table 2. Data of items in Table 3 were ordered according to the original ASQ-ID item. The data were re-grouping into 7 categories as the result of the initial solution, as shown in Table 3. The original ASQ-ID is composed of 4 sub-scales, i.e., sexual rights (13 items), parenting (7 items), non-reproductive sexual behavior (5 items), and self-control (3 items).

Based on our analysis (see Table 3), the emerged factor 1 was composed of 7 retained items, factor 2 contained 5 items, factor 3 contained 4 items, factor 4 contained 5 items, factor 5 contained 4 items, factor 6 contained 2 items and factor 7 contained only 1 item.

The emerged of 7 factors in Table 4 were re-grouping into 4 factors according to the original ASQ-ID subscales as shown in Table 4. Grouping was based on the greatest number of item labels (sexual right=SR, parenting=PAR, non-reproductive sexual behavior=NRSB or self-control=SC) in each emerged item. Re-grouping the new sexual rights sub-scale composed of 7 items (SR2, SR4, SR6, SR8, SR9, SR10, SR11). The new parenting sub-scale is composed of 13 items (PAR1, PAR2, PAR3, PAR4,

PAR5, PAR6, PAR7, SR1, SR5, SR12, SR13, NRSB1, SC1). The new non-reproductive sexual behavior sub-scale is composed of 4 items (NRSB2, NRSB3, NRSB4, NRSB5). The new self-control sub-scale is composed of 4 items (SC2, SC3, SR3, SR7).

Descriptive statistics of the original ASQ-ID and Indonesian adaptation ASQ-ID after re-grouping are shown in Table 5. The values of the sexual rights sub-scales of the original ASQ-ID were higher than the Indonesian adaptation ASQ-ID. On the other hand, the parenting sub-scales of the original version were lower than the adaptation version. This difference occurred due to the number of items in the original ASQ-ID questionnaire being different compared to the Indonesian version, as shown in Table 4. The non-reproductive sexual behavior and self-control subscales were similar to the original compared to the adaptation version. Table 5 also shows the high and significant correlation between sub-scales of the original and adaptation version. The correlation coefficient ranged from 0.84 to 0.95.

ASQ-ID Reliability

The reliability of ASQ-ID was measured using Cronbach's alpha. Cronbach's alpha of the original ASQ-ID overall was high, i.e., 0.833. Since the items of the adaptation version were similar to the original items, ASQ-ID overall was also high, i.e., 0.833. Table 6 presents analyses of the internal consistency of the adapted Indonesia ASQ-ID was calculated according to item-total correlation, and Cronbach's alpha method was done for all items and sub-scales.

Table 2: Factor/Sub-Scale Analysis of Pattern Matrix of the Indonesian Version of ASQ-ID. All Items were Ordered according to the Original ASQ-ID

Items	Loading factors/sub-scales						
	1	2	3	4	5	6	7
SR1	0.088	0.466	0.097	0.516	0.088	0.023	0.162
SR2	0.258	-0.039	0.005	-0.022	-0.014	0.845	-0.003
SR3	0.275	-0.086	0.071	-0.090	0.567	0.300	-0.190
SR4	0.282	-0.065	-0.009	-0.012	0.102	0.843	0.032
SR5	0.450	-0.135	-0.005	0.155	0.241	0.443	-0.092
SR6	0.112	0.794	0.180	0.175	-0.005	-0.050	-0.022
SR7	0.332	-0.413	-0.056	0.122	0.416	0.089	0.031
SR8	0.123	0.497	0.297	0.467	0.020	-0.035	0.087
SR9	0.164	-0.615	0.116	0.108	0.108	0.146	0.115
SR10	0.349	0.596	0.192	0.392	-0.038	-0.116	0.009
SR11	-0.097	0.678	0.268	0.134	-0.043	0.074	0.016
SR12	0.034	-0.002	0.068	0.713	-0.106	-0.078	-0.122
SR13	0.575	-0.130	-0.175	0.012	0.093	0.127	0.206
PAR1	0.182	0.272	0.078	0.625	-0.081	0.107	0.029
PAR2	0.771	0.127	-0.011	0.047	0.048	0.127	-0.065
PAR3	0.623	-0.067	-0.076	0.130	0.205	0.228	-0.220
PAR4	0.805	0.049	-0.108	0.170	0.131	0.150	-0.059
PAR5	0.824	0.086	0.083	0.062	0.167	0.144	0.080
PAR6	-0.031	-0.044	0.009	-0.033	0.027	-0.010	0.916
PAR7	0.514	0.338	0.139	0.526	-0.243	-0.026	-0.036
NRSB1	-0.176	-0.220	0.454	0.511	0.136	0.103	-0.005
NRSB2	0.534	-0.107	0.560	-0.177	0.229	0.202	-0.103
NRSB3	0.008	0.194	0.792	0.222	-0.082	-0.087	0.089
NRSB4	0.022	0.247	0.777	0.184	-0.022	-0.061	-0.012
NRSB5	-0.134	0.149	0.824	0.032	-0.181	0.061	-0.037
SC1	0.739	-0.047	0.101	-0.016	0.229	0.087	0.026
SC2	0.236	-0.045	-0.059	-0.056	0.844	0.001	0.048
SC3	0.160	0.009	-0.133	-0.083	0.849	0.000	0.082

SR= Sexual right; PAR=Parenting; NRSB= Non-reproductive sexual behavior; SC=Self-control.

Table 3: Grouping of Items according to Factor/Sub-Scale Analysis

Emerged Factors/sub-scales	Retained items
Factor 1	SR5, SR13, PAR2, PAR3, PAR4, PAR5, SC1
Factor 2	SR6, SR8, SR9, SR10, SR11
Factor 3	NRSB2, NRSB3, NRSB4, NRSB5
Factor 4	SR1, SR12, PAR1, PAR7, NRSB1
Factor 5	SR3, SR7, SC2, SC3
Factor 6	SR2, SR4
Factor 7	PAR6

SR= Sexual right; PAR=Parenting; NRSB= Non-reproductive sexual behavior; SC=Self-control.

Table 4: Re-Grouping of Items from Emerged Factors/Sub-Scales to Original ASQ-ID

Factors/Sub-scales	Re-grouping items
Sexual right	SR2, SR4, SR6, SR8, SR9, SR10, SR11
Parenting	PAR1, PAR2, PAR3, PAR4, PAR5, PAR6, PAR7, SR1, SR5, SR12, SR13, NRSB1, SC1
Non-reproductive sexual behavior	NRSB2, NRSB3, NRSB4, NRSB5
Self-control	SC2, SC3, SR3, SR7

SR= Sexual right; PAR=Parenting; NRSB= Non-reproductive sexual behavior; SC=Self-control.

Table 5: Descriptive Statistics of the Original ASQ-ID and the Indonesian Version of ASQ-ID after Re-Grouping and Correlation Coefficient between the Original and the Indonesian Version of ASQ-ID

Factors/Sub-scales	Original ASQ-ID		Indonesian adaptation ASQ-ID after re-grouping		Correlation coefficient (95% CI)*
	Mean± SD	95% CI of the mean	Mean± SD	95% CI of the mean	
Sexual right	50.46±5.318	50.04 to 50.88	28.71±3.287	28.45 to 28.97	0.85 (0.83 to 0.87) [†]
Parenting	29.67±4.294	29.33 to 30.00	47.27±6.442	46.76 to 47.78	0.92 (0.90 to 0.93) [†]
Non-reproductive sexual behavior	18.72±4.016	18.41 to 19.04	16.20±3.373	15.93 to 16.46	0.95 (0.94 to 0.95) [†]
Self-control	11.65±2.247	11.47 to 11.83	14.76±2.745	14.54 to 14.98	0.84 (0.81 to 0.86) [†]

*Pearson's correlation coefficient.

[†]p<0.001.

Table 6: Reliability Analysis of Factors/Sub-Scales of Original ASQ-ID and Indonesian Version of ASQ-ID

Factors/Sub-scales	Cronbach's Alpha	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Composite reliability
Original ASQ-ID				
Sexual right	0.632	0.703	0.417	0.409
Parenting	0.774	0.633	0.491	0.779
Non-reproductive sexual behavior	0.745	0.252	0.739	0.762
Self-Control	0.690	0.393	0.678	0.753
Indonesian ASQ-ID				
Sexual right	0.484	0.679	0.820	0.832
Parenting	0.787	0.815	0.799	0.914
Non-reproductive sexual behavior	0.770	0.429	0.844	0.831
Self-Control	0.745	0.373	0.849	0.776

Table 6 shows the results of the reliability analysis of the original and the adaptation of the ASQ-ID questionnaire. Cronbach-alfa of the sexual right subscale of the original version was higher compared to the adaptation version. However, the parenting, non-reproductive sexual behavior, and self-control subscales were lower compared to the adaptation version. The composite reliability factors of the adaptation version were higher compared to the original version. These results showed that the Indonesian version of ASQ-ID had good reliability.

DISCUSSION

This study aimed to translate and adapt the original ASQ-ID questionnaire into the Indonesian language and to determine the reliability and validity of the adapted questionnaires. Undergraduate students might have a moderate perspective on religions and cultural beliefs; therefore, the effect of conservative religion and cultural beliefs might be minimized. All participants had completed all items in the ASQ-ID questionnaire suggesting good face and content validity [18, 19].

Compared to the study by Cuskelly in the Australian population [2], attitudes to the sexual expression of individuals with intellectual disability in the Indonesian population showed mean of factors: sexual rights, parenting, non-reproductive sexual behavior, and self-control were lower than Australian and US population. Non-reproductive sexual behavior sub-scale is composed of 5 questions about homosexuality and masturbation for Indonesian, which is a sensitive topic of culture and religious beliefs [10].

Analysis showed convergent validity of the Indonesian version is unsatisfactory. That the set of indicators represents one latent variable or factor/sub-scale in the adapted questionnaire was not fit to the construct of the underlying latent variable. The cause reliability analysis shows that Cronbach alpha of the overall score of the adapted Indonesian version of ASQ-ID was high. The analysis also shows that each sub-scale has adequate reliability. Data from the survey showed that the participants represent the young generation of the Indonesian population, who tend to maintain religious beliefs such as agreeing to a heterosexual relationship. Most participants agreed that women with ID have the right to marry. However, most participants agreed that women with ID should be permitted to have children within marriage.

For the population who lives in residential areas or commercial properties such as apartments, hotels, hostels, and boarding houses, sex education and behavior have an important role in safeguarding from sexual exploitation [20]. A person with ID commonly is relied on family members or staff of providers to help them in daily life. Family and staff attitudes have an important role in education and knowledge; therefore, a person with ID can be safeguarded from sexual abuse and properly express their attitudes towards sexuality [21]. Previous studies showed staff who assist a person with ID in a community or residential facility that had training in sexuality reported more positive attitudes toward sexuality. That is pointed out training has a positive effect on attitudes toward sexuality. Support staff and family members have to provide sexual education for a person with intellectual disabilities [20, 22, 23]. Sexuality is relevant to the work of health professionals. However, in fact, sexuality has never been taught in many medical schools. In general, there is reproduction in the medical curriculum but not sexual attitudes [24]. Thus, the attitude towards sex should be included as a specific subject of sexual education or part of reproduction [23, 24].

In measuring the adaptation questionnaire, there may be changes in the questionnaire structure resulting from cultural differences. The changes may result from items/questions translation. Translating a questionnaire into a different language is not merely translating the language but also involves cultural and psychological aspects [25]. In this study, ASQ-ID was translated from English to the Indonesian language by a certified translation and translated back to Indonesian, and the judgment by the experts was made before the study. The Indonesian version adaptation of the ASQ-ID questionnaire still preserves the content of all questions from the original questionnaire. The questions of the adapted ASQ-ID questionnaire are understandable for all participants. Sexual rights and parenting subscales had the highest internal consistency, indicating that the sexual right and parenting subscales were developed to assess the same construct yielding similar scores. The non-reproductive sexual behavior and the self-control subscales had low internal consistency due to the responses of each item on the subscales were varied. The variation might be due to the academic background of participants. A previous study indicated that medical and psychology undergraduates had more favorable attitudes, whereas public health undergraduates had less favorable attitudes [13]. The public health undergraduate study program focuses more on health promotion and disease prevention and less on sexual and reproductive education [26]. Another factor that may cause variation in the answer is the religious background of participants [27]. The previous study shows religion is a very strong predictor of attitudes toward sexuality. ASQ-ID questionnaire contains several statements exploring sensitive issues regarding the religious norms and values associated with immorality and social judgment [13]. In Islam, extramarital sex and homosexuality are prohibited. However, masturbation is generally considered forbidden but still a matter of debate [28, 29]. This fact indicates that language translation only by preserving ASQ-ID original content may not be suitable for some parts of the Indonesian population. Developing a new questionnaire suitable for Indonesian culture and customs is necessary.

Confirmatory Factor Analysis (CFA) is a form of structural equation modeling (SEM) that has been widely used for constructing validation studies, developing new measures, and testing the validity and reliability of the new instrument [30]. Construct define as a hypothesis that represents a group of correlated behaviors while studying individual differences and/or

similarities under different conditions [31]. A construct validity test was done to analyze the theoretical relationship of a variable to other variables in the measures. The construct validity integrated the internal measure's structure or the correct measurement of variables intended to be examined [18, 31] to examine whether the indicator converges in a single construct or not. An indicator is declared to converge if the analysis shows a high and significant value of the loading factor [30]. Since ASQ-ID by Cuskelly *et al.* has been established and has a strong theory of structure [2, 20], this study was started with CFA instead of EFA to confirm that all items in each sub-scale represent the original subscale [32, 33]. EFA is then employed when the variables to be analyzed are either newly developed or have not been previously analyzed or when the theoretical basis for the factor analysis model is weak. Thus, EFA is suitable during an early stage of questionnaire development. On the other hand, CFA is appropriate when a preexisting questionnaire such as ASQ-ID has been used [32, 34].

Exploratory Factor Analysis (EFA) of the Indonesian version of ASQ-ID yielded a better questionnaire structure. Thus, it is more suitable for the Indonesian population. The difference in sub-scale composition of the Indonesian version in this study is possibly due to the difference in population characteristics between the Indonesian and the original population where the study was conducted [13, 14, 34]. As mentioned in the discussion section that religious and cultural beliefs may influence participant response. It is necessary to reexamine the Indonesian translation, revise the structure and add or remove indices that cause the model that may not to be convergent. Another possible cause of low convergence is the sample size [32]. Larger sample size is considered better because it will increase the accuracy and power of statistical analysis [35]. ASQ-ID is composed of 4 sub-scales (sexual rights, parenting, non-reproductive sexual behavior, and self-control) [2, 14], and according to Wolf *et al.*, a sample size of at least 400 is needed [36]. The sample size of this study was 617 participants. Therefore the sample size in this study is considered satisfied [36].

CONCLUSION

The adapted Indonesian version of ASQ-ID has good validity and high reliability. Thus, this Indonesian version of the ASQ-ID questionnaire can be used to measure the attitude toward sexuality in individuals with ID. Nevertheless, it is necessary to develop an Indonesian version of the ASQ-ID questionnaire to accommodate Indonesian culture and beliefs.

ACKNOWLEDGEMENT

This research was supported by Universitas Diponegoro, Semarang, Indonesia WCRU-No:118-02/UN7.6.6/PP/2021. We would like to express appreciation to all participants in this study.

ABBREVIATIONS

ASQ-ID	= Attitudes toward Sexuality Questionnaires in Intellectual Disability
CFA	= Confirmatory Factor Analysis
CFI	= Comparative Fit Index
GFI	= Goodness of Fit Index
ICC	= Intraclass Correlation Coefficient
ID	= Intellectual Disability
RMSEA	= Root Mean Square Error of Approximation
TLI	= Tucker–Lewis Index

REFERENCES

- [1] Shah S. "Disabled People Are Sexual Citizens Too": Supporting Sexual Identity, Well-being, and Safety for Disabled Young People. *Frontiers in Education* 2017; 2: 46: 1-6. <https://doi.org/10.3389/educ.2017.00046>
- [2] Cuskelly M, Gilmore L. Attitudes to Sexuality Questionnaire (Individuals with an Intellectual Disability): scale development and community norms. *Journal of Intellectual & Developmental Disability* 2007; 32(3): 214-21. <https://doi.org/10.1080/13668250701549450>
- [3] Esmail S, Darry K, Walter A, Knupp H. Attitudes and perceptions towards disability and sexuality. *Disability and Rehabilitation* 2010; 32(14): 1148-55. <https://doi.org/10.3109/09638280903419277>
- [4] Jansen-van Vuuren J, Aldersey HM. Stigma, Acceptance and Belonging for People with IDD Across Cultures. *Current Developmental Disorders Reports* 2020; 7(3): 163-72. <https://doi.org/10.1007/s40474-020-00206-w>
- [5] Aldersey H, Kavira S, Kiasimbua J, Lokako W, Miaka P, Monte L. Stigma experienced by families with members with intellectual disabilities in Kinshasa, Democratic Republic of the Congo. *Intervention* 2018; 16(2): 119-28. https://doi.org/10.4103/INTV.INTV_13_18
- [6] Gabel S. South Asian Indian cultural orientations toward mental retardation. *Ment Retard* 2004; 42(1): 12-25. [https://doi.org/10.1352/0047-6765\(2004\)42<12:SAICOT>2.0.CO;2](https://doi.org/10.1352/0047-6765(2004)42<12:SAICOT>2.0.CO;2)
- [7] Hodapp RM, Fidler DJ. *International Review of Research in Developmental Disabilities: Fifty Years of Research in Intellectual and Developmental Disabilities*. Cambridge: Elsevier Science; 2016.
- [8] McDaniel J. Indonesia, modernity and some problems of religious adaptation. *Wacana* 2014; 15(2): 314-25. <https://doi.org/10.17510/wacana.v15i2.406>
- [9] Riyani I. Research on (women's) sexuality in Islam. *Islamika Indonesiana* 2014; 1(2): 1-18.
- [10] Winarni TI, Hardian H, Suharta S, Ediati A. Attitudes Towards Sexuality in Males and Females with Intellectual Disabilities:

- Indonesia Setting. *Journal of Intellectual Disability - Diagnosis and Treatment* 2018; 6: 43-8.
<https://doi.org/10.6000/2292-2598.2018.06.02.3>
- [11] Ditchman N, Easton AB, Batchos E, Rafajko S, Shah N. The Impact of Culture on Attitudes Toward the Sexuality of People with Intellectual Disabilities. *Sexuality and Disability* 2017; 35(2): 245-60.
<https://doi.org/10.1007/s11195-017-9484-x>
- [12] Adamczyk A, Pitt C. Shaping attitudes about homosexuality: The role of religion and cultural context. *Social Science Research* 2009; 38(2): 338-51.
<https://doi.org/10.1016/j.ssresearch.2009.01.002>
- [13] Evlyn D, Cayami FK, Hardian, Ediati A, Utari A, Winarni TI. Attitudes of Indonesian health science undergraduates toward sexuality in individuals with intellectual disabilities. *Research in Developmental Disabilities* 2021; 118: 104082.
<https://doi.org/10.1016/j.ridd.2021.104082>
- [14] Cuskelly M, Bryde R. Attitudes towards the sexuality of adults with an intellectual disability: parents, support staff, and a community sample. *Journal of Intellectual & Developmental Disability* 2004; 29(3): 255-64.
<https://doi.org/10.1080/13668250412331285136>
- [15] Australian Human Rights Commission. Freedom from Discrimination: Report on the 40th anniversary of the Racial Discrimination Act. Sydney: Australian Human Rights Commission; 2015.
- [16] Yazbeck M, McVilly K, Parmenter TR. Attitudes Toward People with Intellectual Disabilities: An Australian Perspective. *Journal of Disability Policy Studies* 2004; 15(2): 97-111.
<https://doi.org/10.1177/10442073040150020401>
- [17] Correa AB, Castro Â, Barrada JR. Attitudes Towards the Sexuality of Adults with Intellectual Disabilities: A Systematic Review. *Sexuality and Disability* 2022; 40(2): 261-97.
<https://doi.org/10.1007/s11195-021-09719-7>
- [18] Strauss ME, Smith GT. Construct validity: advances in theory and methodology. *Annual Review of Clinical Psychology* 2009; 5: 1-25.
<https://doi.org/10.1146/annurev.clinpsy.032408.153639>
- [19] Rubio DMR, Berg-Weger M, Tebb SS, Lee ES, Rauch S. Objectifying content validity: Conducting a content validity study in social work research. *Social Work Research* 2003; 27(2): 94-104.
<https://doi.org/10.1093/swr/27.2.94>
- [20] Meaney-Tavares R, Gavidia-Payne S. Staff characteristics and attitudes towards the sexuality of people with intellectual disability. *Journal of Intellectual & Developmental Disability* 2012; 37(3): 269-73.
<https://doi.org/10.3109/13668250.2012.701005>
- [21] Healy E, McGuire BE, Evans DS, Carley SN. Sexuality and personal relationships for people with an intellectual disability. Part I: service-user perspectives. *Journal of Intellectual Disability Research* 2009; 53(11): 905-12.
<https://doi.org/10.1111/j.1365-2788.2009.01203.x>
- [22] Evans DS, McGuire BE, Healy E, Carley SN. Sexuality and personal relationships for people with an intellectual disability. Part II: staff and family carer perspectives. *Journal of Intellectual Disability Research* 2009; 53(11): 913-21.
<https://doi.org/10.1111/j.1365-2788.2009.01202.x>
- [23] de Wit W, van Oorsouw WMWJ, Embregts PJCM. Sexuality, Education and Support for People with Intellectual Disabilities: A Systematic Review of the Attitudes of Support Staff and Relatives. *Sexuality and Disability* 2022; 40: 315-46.
<https://doi.org/10.1007/s11195-021-09724-w>
- [24] Murphy M. Everywhere and nowhere simultaneously: The 'absent presence' of sexuality in medical education. *Sexualities* 2019; 22(1-2).
<https://doi.org/10.1177/1363460717708147>
- [25] van de Vijver F, Tanzer NK. Bias and equivalence in cross-cultural assessment: an overview. *European Review of Applied Psychology* 2004; 54(2): 119-35.
<https://doi.org/10.1016/j.erap.2003.12.004>
- [26] Kershaw G, Grivna M, Elbarazi I, AliHassan S, Aziz F, Al Dhaheer AI. Integrating Public Health and Health Promotion Practice in the Medical Curriculum: A Self-Directed Team-Based Project Approach. *Front Public Health* 2017; 5: 193.
<https://doi.org/10.3389/fpubh.2017.00193>
- [27] van de Vijver F, Tanzer NK. Bias and equivalence in cross-cultural assessment: An overview. *Revue Européenne de Psychologie Appliquée* 2004; (54): 119-35.
<https://doi.org/10.1016/j.erap.2003.12.004>
- [28] Adamczyka A, Hayesa BE. Religion and sexual behaviors: Understanding the influence of Islamic cultures and religious affiliation for explaining sex outside of marriage. *American Sociological Review* 2012; 77(5): 723-46.
<https://doi.org/10.1177/0003122412458672>
- [29] Davies SG. Islamic Identity and Sexuality in Indonesia. In: Ratuva S, editor. *The Palgrave Handbook of Ethnicity*. Singapore: Springer Singapore; 2019; pp. 1-14.
https://doi.org/10.1007/978-981-13-0242-8_58-1
- [30] Said H, Badru BB, Shahid M. Confirmatory factor analysis (CFA) for testing validity and reliability instrument in the study of education. *Australian Journal of Basic and Applied Sciences* 2011; 5: 1098-103.
- [31] Kyriazos TA. Applied Psychometrics: The 3-Faced Construct Validation Method, a Routine for Evaluating a Factor Structure. *Psychology* 2018; 9 (8): 2044-72.
<https://doi.org/10.4236/psych.2018.98117>
- [32] Knehta E, Runyon C, Eddy S. One Size Doesn't Fit All: Using Factor Analysis to Gather Validity Evidence When Using Surveys in Your Research. *CBE-Life Sciences Education* 2019; 18(1): rm1.
<https://doi.org/10.1187/cbe.18-04-0064>
- [33] Orçan F. Exploratory and Confirmatory Factor Analysis: Which One to Use First? *JMEEP* 2018; 9(4): 414-21.
<https://doi.org/10.21031/epod.394323>
- [34] Bandalos DL, Finney SJ. Factor Analysis. Exploratory and Confirmatory. In: Hancock GR, Stapleton LM, Mueller RO, editors. *The Reviewer's Guide to Quantitative Methods in the Social Sciences*. New York: Taylor & Francis; 2019; pp. 98-122.
<https://doi.org/10.4324/9781315755649-8>
- [35] Gagne P, Hancock GR. Measurement Model Quality, Sample Size, and Solution Propriety in Confirmatory Factor Models. *Multivariate Behavioral Research* 2006; 41(1): 65-83.
https://doi.org/10.1207/s15327906mbr4101_5
- [36] Wolf EJ, Harrington KM, Clark SL, Miller MW. Sample Size Requirements for Structural Equation Models: An Evaluation of Power, Bias, and Solution Propriety. *Educational and Psychological Measurement* 2013; 76(6): 913-34.
<https://doi.org/10.1177/0013164413495237>

Received on 20-07-2022

Accepted on 16-09-2022

Published on 14-10-2022

<https://doi.org/10.6000/2292-2598.2022.10.05.3>© 2022 Hardian *et al.*; Licensee Lifescience Global.

This is an open access article licensed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>) which permits unrestricted use, distribution and reproduction in any medium, provided the work is properly cited.