RELIABILITY AND VALIDATION OF THE MALAY VERSION OF THE GENDER EQUITABLE MEN SCALE QUESTIONNAIRE

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Abstract

Gender role beliefs refer to individuals' belief that men and women should shoulder their role-related behaviour. Evidence showed that patriarchal gender roles are directly associated with violence perpetration. Gender roles can be measured with the GEMS questionnaire, which was developed in English. Thus, it needs to be adapted to the local language to be used in a family violence study among married men in Sarawak, Malaysia. This study aims to translate and validate the original English version of the GEMS into the Malay language. The English version was translated forward and backward into Malay, followed by content validation by six public health and language experts. The scale was further tested for face validity among 30 people from the general population, followed by a cross-sectional study involving 200 male respondents. The item-level content validity index (I-CVI) ranges from 0.83 to 1. Exploratory factor analysis resulted in three components within the scale, and confirmatory factor analysis established convergent and discriminant validity. The overall Cronbach's alpha ranged from 0.778 to 0.921. In conclusion, the Malay version of the GEMS is a valid and reliable tool for measuring gender equitability among men in Sibu, Sarawak.

Keywords: Gender Equitable Men Scale, Content Validation, Face Validity, Exploratory Factor Analysis, Confirmatory Factor Analysis

Introduction

Gender role belief refers to the appropriate behaviour and work-life balance within a particular society. Individuals believe that men and women should shoulder their role-related behaviour. The concept of gender roles includes traditional or patriarchal versus modern or egalitarian (1, 2). Patriarchal gender roles prioritise men, portraying men as the head of households, men as having the final say in decision-making, and women as being submissive. From the feminist theory perspective, men with patriarchal gender roles are highly likely to perpetrate violence in the family (1, 3). The patriarchal concept reinforces the dominant masculinities, emphasising men's power and control over women. On the contrary, egalitarian gender roles divide men and women equally and endorse more flexibility in dividing family roles (2).

Empirical evidence shows that patriarchal gender roles are directly associated with intimate partner violence perpetration. Gender roles can also mediate violence through exposure to family violence during childhood (4). Moreover, gender-related attitudes such as rigid gender roles, beliefs, and attitudes toward inequality are also associated with violence against women (5). Therefore, the United Nations (UN) Women (6) emphasises gender equality to prevent violence against women. Understanding the male attitude is essential to producing sound interventions to transform rigid gender norms and promote gender equality.

Regarding gender role measurements, Reyes et al. (1) and Shen et al. (2) employed the Attitudes Towards Women Scale (ATWS). It consists of 11 statements of normative beliefs about the roles of men and women in society, measured through a four-point Likert scale. A higher score indicates patriarchal gender role beliefs. On the other hand, Das et al. (7) used the Gender Equitable Men Scale (GEMS), which consists of 31 statements covering gender norms, gender attitudes, and gender-based violence. In the International Men and Gender Equality Survey (IMAGES) by the United Nations, the GEMS has been adapted in six countries. The number of items retained by each country ranges from 15 to 21. The responses were measured through a three-point Likert scale; strongly agree, somewhat agree, and do not agree (8).

Even though the questionnaire is widely used, the number of items retained differs between countries. Hence, in this study, we adapted the 20-item GEMS used in the IMAGES study by the UN Women (8) and translated them into Bahasa Malaysia. The translation used in this study considers cross-cultural adaptation to ensure it is culturally acceptable in Malaysia. Thus, this study aims to translate and validate the English version of the GEMS into Bahasa Malaysia to be used in a family violence study in Sarawak. A reliable and valid GEMS would be vital to measuring the gender norms among rural Sarawakians, a first step to planning effective prevention and intervention programs in Sarawak.

Materials and Methods

The validation process involved expert content and face validity evaluation, followed by a cross-sectional study for psychometric properties. The steps for the adaptation and validation process were summarised below.

Translation and Adaptation Process

We adapted the GEMS by Singh et al. (8) to determine gender equality among married men and its relation to family violence. We modified the responses into a five-point Likert scale: strongly agree, agree, neutral, disagree, and strongly disagree. The score varies from one to five. Among the original 20-item GEMS scale, ten common GEMS items must be kept for the scale to be valid. The other ten items can be kept or removed for cultural sensitivity (8). Therefore, we removed six items due to cultural sensitivity, leaving only 14. The six items removed were: '*Men are always ready to have sex (item 8)*', '*I would be outraged if my wife asked me to use a condom (item 10)'*, '*I would never have a gay friend (item 12)*', *'Men should be embarrassed if unable to get an erection (item 15)', 'Man/woman should know what his/her partner likes during sex (item 17)', and 'It's important for men to have friends to talk about his problems (item 19)'*. The six items removed here were among the ten that could be removed. The six removed items also showed limited variation and contribution to the overall scale, as reported in countries like India, Croatia, Mexico, and Brazil (8).

The scale was translated into Bahasa Malaysia based on the international guidelines for cross-cultural adaptation (9). The purpose of the translation was to achieve equivalence between the English and Bahasa Malaysia versions. Two translators whose mother tongue is Bahasa Malaysia conducted the forward translation. The translators are the language professors at the Faculty of Language, University Malaysia Sarawak (UNIMAS). Each translator independently translated the questionnaire, and their translations were then synthesised and analysed to create a consolidated report. Next, two other language professors from the same faculty performed the backward translation. This step helped identify discrepancies between the original and translated versions. The principal researchers carefully examined the forward and backward translations, considering any disparities or variations in meaning, language, and cultural context. They worked to reconcile discrepancies and refine the translation, resulting in the first version of the questionnaire in Bahasa Malaysia.

Validation process

The validation process included assessing content validity, face validity and conducting a psychometric analysis of the scale. Upon completing the validation process, we successfully developed the Bahasa Malaysia version of the GEMS.

Content validity

The goals of content validation were to determine the relevance, clarity, simplicity, and ambiguity of the 14 items in the questionnaire. Three public health specialists and three language experts reviewed and assessed all four parameters. The responses were on a four-point Likert scale (1-strongly disagree, 2-disagree, 3-agree, and 4-strongly agree) (10).

Face validity

To establish face validity, we randomly selected 30 individuals from the general population, ensuring their demographics closely matched those of the future respondents who will participate in answering the questionnaire (11). The assessment form was distributed face-to-face. The items assessed were (i) instrument format, (ii) grammar, (iii) clarity, (iv) difficulty level for respondents, (v) sentence structure, (vi) reasonable scale responses, (vii) reasonable number of items, (viii) culturally acceptable, (ix) relevant, and (x) timing (12, 13). The responses were on a four-point Likert scale ranging from strongly disagree to strongly agree (13).

Psychometric analysis

In April 2022, we conducted a cross-sectional, household-based interview in Sibu, Sarawak. Two neighborhood areas were randomly selected from a list provided by the Sibu Resident Office, Sarawak (14). From the chosen neighbourhood areas, we used a random number generator to select our respondents based on the household list provided by the head of the community. The inclusion criteria for the respondents were as follows: 1) being a married male, 2) age 18 years and above, 3) Malaysian citizenship, 4) literate and able to understand Bahasa Malaysia. Individuals with mental disorders or those unwilling to participate were excluded. The decision to focus solely on male respondents was due to the intention to utilise the translated questionnaire in a study on family violence among males in Sarawak, Malaysia. The sample size was calculated based on the formula suggested by Viechtbauer et al. (15), $n = \ln(1-0.95)/\ln(1-0.02)$. The formula included a 95% confidence interval (γ) and the probability (π) of detecting the slightest problem that may arise during the actual study. The probability (π) was set at 0.02 (2%) to ensure accuracy. However, since the study also determined the psychometric properties of

the questionnaire, the minimal sample size required is 200 (16). Therefore, the final sample size was 200.

Statistical analysis

The parameters calculated in content validity were I-CVI, S-CVI/Ave, and S-CVI/U for relevance, clarity, simplicity, and ambiguity. The acceptable CVI for six experts is ≥ 0.83 (10, 17). Next, we assessed face validity by calculating the intraclass correlation (ICC), internal reliability by calculating the Cronbach alpha, and exploratory factor analysis using IBM SPSS version 28 (18). The acceptable value for Cronbach's alpha is > 0.70 (19). For the ICC calculation, we selected a two-way mixed-effects model, multiple rater type with an absolute agreement between the raters. The ICC value between 0.75 and 0.90 is considered good, and > 0.90 is excellent (20, 21). We conducted an exploratory factor analysis to explore the scale domains (22) and a confirmatory factor analysis for criterion validity. An oblique rotation was used in factor analysis to allow correlations among the factors (8). The underlying domains within the 14 items were explored using the principal axis factoring extraction method (23) with a significance level of 0.05 and a minimum of 0.30 cut-off value for factor loading values (22). Finally, we conducted the confirmatory factor analysis with SmartPLS statistical software with the partial least square estimation method.

Results

Content validity

The CVI was based on the experts' rating of each item in the questionnaire (24). The I-CVI ranges from 0.83 to 1 for all parameters, which indicates that the experts agreed the 14 items were relevant, clear, simple, and not ambiguous. The S-CVI/Ave for relevance was 0.99, and clarity, simplicity, and ambiguity were 0.96. All the values were above the satisfactory level of CVI (25). Based on the item-level content validity index (I-CVI) and scale-level content validity index based on average (S-CVI/Ave), the Malay version of the GEMS has good content validity. However, the scale-level content validity index based on universal agreement (S-CVI/U) varied from 0.79 for clarity, simplicity, and ambiguity to 0.93 for relevance (Table 1).

Table 1: Content analysis for the GEMS

Parameters	I-CVI	S-CVI/Ave	S-CVI/U
Relevance	0.83-1	0.99	0.93
Clarity	0.83-1	0.96	0.79
Simplicity	0.83-1	0.96	0.79
Ambiguity	0.83-1	0.96	0.79

I-CVI = item-level content validity index
S-CVI/Ave = scale-level content validity index based on average
S-CVI/U = scale-level content validity index based on universal agreement

Face validity

All respondents indicated that they understood the questions. They agreed the format, grammar, and sentences were clear and easy to understand. Besides that, the questions were easy to answer with reasonable responses and items. The ICC (3,30) is 0.0980 (0.957, 0.994), with an absolute agreement and a 95% confidence interval, with F (9,261) = 50.662, p < 0.001. The result indicates that the 14 items have excellent reliability, with a 98% variance in the mean of these rates (26).

Factor analysis

There were no missing values, and 25 outliers were removed based on Mahalanobis distance (27). Due to the non-normal distribution of the data, we opted for the Principal Axis Factoring estimation method, which does not rely on any distribution assumptions. (22). An oblique rotation was used to allow correlation among the factors (8). The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.802, which indicates acceptable sample adequacy for a sample between 100 and 200. Bartlett's Test of Sphericity was significant with p < 0.001, indicating that the samples are significantly divergent from the identity matrix and are suitable for structural detection (28). The cross-over eigenvalue to determine the number of components was determined using the Monte Carlo PCA for parallel analysis. The cut-off value of 1.2508 showed that a three-domain solution best explains this data (29). Items 3, 4, 7, and 8 were removed because the communalities were < 0.30 (30). The three-component solution accounted for 78.37%, with the first component explaining the highest amount of variance, 48.79%. The rotation converged in eight iterations. Three items were loaded into the first component, three on the second, and four on the third. The components were named reproductive (component 1), gender (component 2), and masculinity (component 3). The factor loadings range from 0.425 to 1.020 (Table 2).

Table 2: Exploratory factor analysis for the GEMS

Components	Items	Factor Loading	Communality
Component 1 Reproductive	(Q12) If a guy gets a woman pregnant, the child is the responsibility of both	0.722	0.688
	(Q13) The participation of the father is important in raising children	0.891	0.860
	(Q14) The couple should decide together if they want to have children	1.020	0.964

Table 2: Exploratory factor analysis for the GEMS (continued)

Components	Items	Factor Loading	Communality
Component 2 Gender	(Q6) It is a woman's responsibility to avoid getting pregnant	0.635	0.389
	(Q1) A woman's most important role is to take care of her home and cook for her family	0.788	0.696
	(Q5) Changing diapers, giving kids a bath, and feeding the kids is the mother's responsibility	0.943	0.933
Component 3 Masculinity	(Q9) A man and a woman should decide together what type of contraceptive to use	0.425	0.410
	(Q10) If someone insults me, I will defend my reputation with force if I have to	0.696	0.841
	(Q2) Men need sex more than women do	0.714	0.467
	(Q11) To be a man, you need to be tough	0.817	0.822
Removed	(Q3) Men don't talk about sex and just do it	-	0.002
	(Q4) There are times when a woman deserves to be beaten	-	0.005
	(Q7) A man should have the final word about decisions in his home	-	0.166
	(Q8) A woman should tolerate violence to keep her family together	-	0.074

Based on the exploratory factor analysis result, we conducted a first-order confirmatory factor analysis with ten items to confirm the scale structure. The analysis of convergent validity showed agreement within all components. The reproductive component showed a Cronbach's alpha (CA) value of 0.926, composite reliability (CR) value of 0.953, average variance extracted (AVE) value of 0.871, and inner indicator variance inflation factor (VIF) value of 1.536. The Gender component shows a CA value of 0.836, CR value of 0.901, AVE of 0.752, and inner VIF of 1.332. Finally, the Masculinity component had a CA value of 0.835, CR of 0.890, AVE of 0.671, and inner VIF of 1.730 (Table 3). Fornell and Larcker (31) recommended CR of more than 0.70, CA of more than 0.70, AVE of more than 0.05, and an inner VIF of less than 2.5 for a strong correlation coefficient. Hence, convergent validity was achieved.

Table 3: Convergent validity of GEMS

	Items	Loadings	Outer VIF	CA	rho_A	CR	AVE	Inner VIF
Reproductive	Q12	0.894	2.512	0.926	0.927	0.953	0.871	1.536
	Q13	0.949	5.782					
	Q14	0.956	6.298					
Gender	Q1	0.889	2.334	0.836	0.869	0.901	0.753	1.332
	Q5	0.932	2.912					
	Q6	0.755	1.667					
Masculinity	Q2	0.739	1.683	0.835	0.860	0.890	0.671	1.730
	Q9	0.748	1.572					
	Q10	0.901	2.755					
	Q11	0.876	2.714					

VIFs < 2.5 are desirable for reflective indicators; VIF=indicator variance inflation factor
Composite reliability (CR) > 0.70
Cronbach's alpha (CA) > 0.70
Average variance extracted (AVE) > 0.50
Standardised root mean squared residual (SRMR) = 0.183

For discriminant validity, the Fornell-Larcker criterion, cross-loadings, Heterotrait-Monotrait Ratio (HTMT), and the square roots of their respective AVE were used to test each component. Comparing the Fornell-Larcker criterion and the square root of the AVE of each component, the analysis showed that the primary component (diagonal value) has a greater value than the correlations with other constructs (31). Next, the cross-loading values were highest within its predetermined components. This proves that each item within the predetermined component determined from the factor analysis in the preceding section was valid (32). The HTMT values for each component were less than the threshold of 0.85, further establishing the discriminant validity (32). The obtained values showed that each component effectively demonstrated discriminant validity (31, 33, 34) (Table4).

Table 4: Discriminant validity of GEMS

Criteria	Items	Reproductive	Gender	Masculinity
Fornell-Larcker Criterion				
Reproductive		**0.933**		
Gender		0.374	**0.868**	
Masculinity		0.581	0.487	**0.819**
Cross loadings				
Reproductive	Q12	**0.894**	0.286	0.584
	Q13	**0.949**	0.365	0.566
	Q14	**0.956**	0.396	0.477
Gender	Q1	0.316	**0.889**	0.517
	Q5	0.429	**0.932**	0.435
	Q6	0.197	**0.775**	0.285
Masculinity	Q2	0.322	0.440	**0.739**
	Q9	0.427	0.177	**0.748**
	Q10	0.525	0.610	**0.901**
	Q11	0.595	0.298	**0.876**
Heterotrait-Monotrait Ratio (HTMT)				
Reproductive				
Gender		0.411		
Masculinity		0.649	0.544	

Squared roots of AVEs shown on diagonal HTMT ratio (< 0.85)

Reliability analysis

This scale has three components: gender, reproductive, and masculinity. Each component was tested separately for internal consistency.

Component 1: Gender

Items 12, 13 and 14 were allocated into component 1. The overall Cronbach's alpha was 0.921. All items had a corrected item-total correlation of > 0.3. In this analysis, if item 12 was deleted, the overall Cronbach's alpha value would increase. However, this leaves the reproductive domain with only two items, which does not meet the minimal requirement of three items per component for stable and successful factor identification (35, 36). Therefore, no items were deleted from this domain (Table 5).

Component 2: Reproductive

Items 1, 5, and 6 were allocated into component 2. The overall Cronbach's alpha was 0.778. All items showed good interrelatedness with a corrected item-total correlation of > 0.3. Items in this domain were saturated. Any deletion of an item will result in an overall decrease in the reliability of this domain. Hence, we retained all items (Table 5).

Component 3: Masculinity

Items 2, 9, 10 and 11 were allocated into component 3. The overall Cronbach's alpha was 0.828. All items showed good interrelatedness with a corrected item-total correlation of > 0.3. Items in this domain were saturated. Any deletion of an item will result in an overall decrease in the reliability of this domain. Hence, all items were retained (Table 5).

Table 5: Reliability analysis of the GEMS

Component	Questions	Overall, Cronbach's Alpha (α)	Corrected Item-Total Correlation	Cronbach's alpha (α) if item deleted
Reproductive	(Q12) If a guy gets woman pregnant, the child is the responsibility of both		0.773	0.950
	(Q13) The participation of the father is important in raising children	0.921	0.870	0.863
	(Q14) The couple should decide together if they want to have children		0.892	0.850
Gender	(Q6) It is a woman's responsibility to avoid getting pregnant		0.682	0.767
	(Q1) A woman's most important role is to take care of her home and cook for her family	0.778	0.810	0.611
	(Q5) Changing diapers, giving kids a bath, and feeding the kids is the mother's responsibility		0.576	0.753
Masculinity	(Q9) A man and a woman should decide together what type of contraceptive to use		0.590	0.816
	(Q10) If someone insults me, I will defend my reputation with force if I have to	0.828	0.558	0.828
	(Q2) Men need sex more than women do		0.757	0.734
	(Q11) To be a man, you need to be tough		0.750	0.752

Discussion

We adapted 14 items from the original GEMS to assess gender equality roles. Based on factor analysis, four items were removed with a communality value of < 0.3. These items were, "Men don't talk about sex and just do it", "There are times when a woman deserves to be beaten," "A man should have the final word about decisions in his home", and "A woman should tolerate violence to keep her family together". The item "Men don't talk about sex and just do it" encompasses the domain of sexuality and sexual relationships. A previous validation study acknowledged the discrepancy when answering this question. Those with a high level of education would tend not to agree with the statement and vice versa (37).

On the other hand, the Malaysian education system does not teach the concept of sexuality (38). Therefore, low communality for this statement does not come as a surprise. Respondents are not responsive to matters of sexuality and do not know how to respond to such a statement. Hence, removing this statement from the GEMS allows for a more internally consistent measurement of gender roles among men in Sarawak, Malaysia.

The next two statements, "There are times when a woman deserves to be beaten" and "A woman should tolerate violence to keep her family together", relates to the attitudes supporting intimate partner violence (IPV). Similar to the study by Guedes and Deligiorgis (37), this concept relates to the level of education. Those who accept and justify IPV have a lower education level and depend on their male partner. The social-cultural constraints and norms like women should be submissive to their partner, the dowry, and cultural inheritance also influence the acceptance of IPV (39). Hence, there was a discrepancy when answering this question resulting in low communalities for these items.

The Bahasa Malaysia version of the GEMS can assess gender roles accurately based on the good item content validity index (I-CVI) ranging from 0.83 to 1, and a good scale (S-CVI/Ave) for relevance, 0.99, and 0.96 for clarity, simplicity, and ambiguity (40). However, the scale-level CVI on the universal agreement (S-CVI/U) varied from 0.79 to 0.93. The S-CVI/U is challenging to achieve because it requires total agreement among experts. Hence, to establish content validity, the I-CVI and S-CVI/Ave were sufficient (24). In terms of reliability, the scale that measured the concept consistent with the overall Cronbach's alpha for each component ranged from 0.778 to 0.921. The 10-item GEMS were highly reliable (40). The total correlation of the corrected items was more than 0.30 and achieved saturation (41). Finally, confirmatory factor analysis showed that all components tested achieved strong convergent validity and achieved discriminant validity.

Limitations

The response bias was inevitable in this study due to social desirability. The respondents may feel that their responses to the items might reflect on them as a person, resulting in an incorrect response. Nonetheless, we tried to minimise this by appointing male research assistants so that the respondents would feel more comfortable answering questions and reassuring the respondents that the information would be kept confidential. Finally, the result can only be generalised to the Sibu population. However, we will use this validated questionnaire in a family violence study across six divisions in Sarawak to determine the generalisability.

Conclusion

The GEMS has been adapted in many countries to measure gender role beliefs and attitudes. However, limited efforts were made to translate and validate the scale for use in Bahasa Malaysia. In the final Bahasa Malaysia version of the GEMS, ten items were retained based on factor analysis and internal consistency. The items were deemed relevant to explore the gender roles among males. In conclusion, the 10-item Bahasa Malaysia version of the GEMS is a valid and reliable tool for assessing gender roles in Sibu, Sarawak.

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Ethical Clearance

The Ethical Committee of University Malaysia Sarawak (UNIMAS) approved this study (Reference: UNIMAS/TNC(PI)/09 – 65/01 (62). We obtained permission from the respective heads of the villages to conduct data collection and written consent from all participants. The participants and heads of villages were briefed about the study's objectives, benefits, and outcomes. They were assured strict data confidentiality and the right to withdraw from the study anytime.

Competing interest

There was no conflict of interest.

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References

1. Reyes HL, Foshee VA, Niolon P, Reidy DE, Hall JE. Gender role attitudes and male adolescent dating violence perpetration: normative beliefs as moderators. J Youth Adolesc. 2016; 45(2):350-60.
2. Shen AC-T, Chiu MY-L, Gao J. Predictors of dating violence among chinese adolescents: the role of

gender-role beliefs and justification of violence. J Interpers Violence. 2012; 27(6):1066-89.
3. Ali PA, Naylor PB. Intimate partner violence: a narrative review of the feminist, social and ecological explanations for its causation. Aggress Violent Behav. 2013; 18(6):611-9.
4. Fakunmoju SB, Rasool S. Exposure to violence and beliefs about violence against women among adolescents in Nigeria and South Africa. SAGE Open. 2018; 8(4):1-17.
5. Zapata-Calvente AL, Megías JL, Moya M, Schoebi D. Gender-related ideological and structural macrosocial factors associated with intimate partner violence against European women. Psychol Women Q. 2019; 43:317-34.
6. UN Women. RESPECT: Preventing Violence against Women Strategy Summary: WHO. 2020. Available at: https://www.unwomen.org/en/digital-library/publications/2019/05/respect-women-preventing-violence-against-women. Accessed 2 September 2022.
7. Das M, Ghosh S, Verma R, O'Connor B, Fewer S, Virata MC, et al. Gender attitudes and violence among urban adolescent boys in India. Int J Adolesc Youth. 2014; 19(1):99-112.
8. Singh AK, Ravi Verma, Gary Barker. Measuring gender attitude: using Gender-Equitable Men Scale (GEMS) in various socio-cultural settings. UN Women. 2013; 1(1):46.
9. Sousa VD, Rojjanasrirat W. Translation, adaptation and validation of instruments or scales for use in cross-cultural health care research: a clear and user-friendly guideline. J Eval Clin Pract. 2011; 17(2):268-74.
10. Mohamad Marzuki MF, Yaacob NA, Yaacob NM. Translation, cross-cultural adaptation, and validation of the malay version of the system usability scale questionnaire for the assessment of mobile apps. JMIR Hum Factors. 2018; 5(2):e10308.
11. Yusoff MSB. ABC of response process validation and face validity index calculation. Educ Med J. 2019; 11(3):55-61.
12. Azwani M, Nor'ain MT, Noor Shah S. Evaluating the face and content validity of a Teaching and Learning Guiding Principles Instrument (TLGPI): a perspective study of Malaysian teacher educators. Malays J Soc Space. 2016; 12(3):11.
13. Oluwatayo JA. Validity and reliability issues in educational research. J Educ Soc Res. 2012; 2(2):10.
14. Sibu Divisional Office. List of community leaders in Sibu division Sibu: Sibu Divisional Resident Office. 2022. Available at: https://sibu.sarawak.gov.my/web/subpage/webpage_view/286. Accessed 11 May 2022.
15. Viechtbauer W, Smits L, Kotz D, Budé L, Spigt M, Serroyen J, et al. A simple formula for the calculation of sample size in pilot studies. J Clin Epidemiol. 2015; 68(11):1375-9.
16. Kyriazos TA. Applied psychometrics: sample size and sample power considerations in factor analysis (EFA, CFA) and SEM in general. Psychol. 2018; 09(08):2207-30.
17. Polit DF, Beck CT, Owen SV. Is the CVI an acceptable indicator of content validity? Appraisal and recommendations. Res Nurs Health. 2007; 30(4):458-67.
18. IBM SPSS Statistics. IBM SPSS Advanced Statistics 28. 28 ed: IBM Corp, 2022.
19. Shahsavari H, Bakhshi F, Khosravi A, Najafi Z, Ghorbani A. Perceived professional preparedness of senior nursing students' questionnaire: Development and psychometric evaluation. Nurs Edu Today. 2020; 93(1):1-6.
20. Koo TK, Li MY. A guideline of selecting and reporting intraclass correlation coefficients for reliability research. J Chiro Med. 2016; 15(2):155-63.
21. Liljequist D, Elfving B, Skavberg Roaldsen K. Intraclass correlation – A discussion and demonstration of basic features. PLoS One. 2019; 14(7):e0219854.
22. Watkins MW. Exploratory factor analysis: a guide to best practice. J Black Psychol. 2018; 44(3):219-46.
23. Akhtar-Danesh N. A comparison between major factor extraction and factor rotation techniques in Q-methodology. Open J App Sci. 2017; 07(04):147-56.
24. Almanasreh E, Moles R, Chen TF. Evaluation of methods used for estimating content validity. Res Soc Adm Pharm. 2019; 15(2):214-21.
25. Zamanzadeh V, Ghahramanian A, Rassouli M, Abbaszadeh A, Alavi-Majd H, Nikanfar A-R. Design and implementation content validity study: development of an instrument for measuring patient-centered communication. J Caring Sci. 2015; 4(2):165-78.
26. Landers RN. Computing intraclass correlations (ICC) as estimates of interrater reliability in SPSS. The Winnower. 2015; 2(1113):1-4.
27. Ghorbani H. Mahalanobis Distance and its application for detecting multivariate outliers. Fu Math Inform. 2019; 34(3):583-95.
28. Shrestha N. Factor analysis as a tool for survey analysis. Am J Appl Math Stat. 2021; 9(1):4-11.
29. Jaikaran-Doe S. Parallel analysis-accuracy in facator retention. Vilnius University, Lithuania. 2015(1):430-3.
30. Zeynivandnezhad F, Rashed F, Kanooni A. Exploratory factor analysis for TPACK among mathematics teachers: why, what and how. Anatol J Educ. 2019; 4(1):59-76.
31. Fornell C, Larcker DF. Structural Equation Models with Unobservable Variables and Measurement Error: Algebra and Statistics. 18 ed. Los Angeles, California: Sage Publications. 1981.
32. Ab Hamid M, Sami W, Sidek MM. Discriminant validity assessment: use of Fornell & Larcker criterion versus HTMT criterion. J Phys. 2017; 890(1):012163.
33. Cheung GW, Wang C. Current approaches for assessing convergent and discriminant validity with

SEM: issues and solutions. Acad Manag Proc. 2017; 2017(1):12706.
34. Henseler J, Ringle CM, Sarstedt M. A new criterion for assessing discriminant validity in variance-based structural equation modeling. J Acad Mark Sci. 2015; 43(1):115-35.
35. Raubenheimer J. An item selection procedure to maximise scale reliability and validity. SA J Ind Psychol. 2004; 30(4):396.
36. Bates R, Holton EF, Hatala JP. A revised learning transfer system inventory: factorial replication and validation. Hum Resour Dev Int. 2012; 15(5):549-69.
37. Guedes A, Deligiorgis D. Men & Boys: Violence Against Women. UN Women. 2012; 1(3):20-24.
38. Razali S, Ramli NAF, Hanafia SS, Abd Rahman NN, Md KN, Rani MAM, et al. Are Malaysians ready for comprehensive sexuality education. J Adv Res Soc Behav Sci. 2017; 9(1):14-28.
39. Kpozehouen A, Paraïso NM, Ahanhanzo YG, Klikpo E, Jérôme CS, Ouédraogo LT, et al. Perception of Beninese on intimate partner violence: evidence from 2011-2012 Benin demographic health survey. BMC Women's Health. 2018; 18(140):1-9.
40. Srinivasan R, Lohith CP. Pilot Study: Assessment of Validity and Reliability. 1st ed. Singapore: Springer Singapore, 2017.
41. Tavakol M, Dennick R. Making sense of Cronbach's alpha. Int J Med Educ. 2011; 2:53-5.