INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN PROGRESSIVE EDUCATION & DEVELOPMENT

OPEN ACCESS JOURNAL

Vol 12, Issue 1, (2023) E-ISSN: 2226-6348

Nominal Group Technique Application Towards Design of Nutrition Education Module to Prevent Stunting Problems among Preschool Children

Anis Salwani Mahmood[1], Azizah Zain[2] & Ahmad Faidz Zakaria[3]

[1,2]Faculty of Human Development, Sultan Idris University of Education, Tanjong Malim, Perak, Malaysia, [3]Department of Education, Teacher Education Institute Sultan Mizan Campus, Besut, Terengganu

Email: anis117m@gmail.com, azizah.zain@fpm.upsi.edu.my, ahmadfaidz@ipgmksm.edu.my

To Link this Article: http://dx.doi.org/10.6007/IJARPED/v12-i1/16695 DOI:10.6007/IJARPED/v12-i1/16695

Published Online: 16 March 2023

Abstract

Nutrition education is a crucial element in Malaysia's National Preschool Standard Curriculum. Learning related to nutrition is very important to increase awareness of the importance of maintaining health in terms of eating practices and a healthy lifestyle in addition to doing physical activity. Health issues such as lack of nutritional intake cause many children in Malaysia to suffer from height problems that do not keep pace with age, i.e., stunting. Teachers must have the knowledge and skills to provide appropriate activities to help preschool children with disabilities. However, there still needs to be a practical guide or module that can be used as a guide for preschool teachers. The Nominal Group Technique (NGT) approach is used to design the main components and elements in the module framework based on expert validation. A total of 10 experts were selected to validate the proposed main components and elements using NGT online workshop. There were three main components proposed in this module framework: Stunting, Nutrition, and Healthy Life Style. In this study, experts are asked to evaluate the module's main components based on the percentage value of the agreement. The value of the percentage of agreement that exceeds 70% (≥70%) is acceptable. The NGT analyses reached experts' consensus on the suitability of the pre-selected items in main components of Nutrition Education Module in Preventing Stunting Problems among Preschool Children. The findings in this phase are used to develop main components and elements of the module based on health and nutrition education for preschool using the Nominal Group Technique (NGT) approach.

Keyword: Nominal Group Technique, Stunting, Preschool Children

Introduction

Malnutrition remains a significant public health concern in most countries and the underlying cause of almost half of child deaths. The long-term effects of childhood malnutrition are diverse, including lower educational attainment, lower economic productivity, and increased risk of non-communicable diseases, including stunting. Children are defined as stunted if their height for age is more than two standard deviations below the median of the WHO Child

Growth Standards (WHO, 2006; WHO et al., 2019). Stunting is one of the various forms of malnutrition and is defined as a height for age z-score (HAZ) less than -2 standard deviations (SD) below the median reference standard (WHO, 2006; WHO et al., 2019). It is an indicator of malnutrition by low cumulative nutritional levels and health conditions caused by inadequate maternal nutrition (Siti Fatihah et al., 2018). This issue is getting more and more attention because it contributes to various problems and long-term effects and affects a child's life until adulthood if it is not curbed from the beginning. In total, 149 million children under five years of age suffer from stunting (Global Nutrition Report, 2020; Laureati, 2022). In 2020, it was found that the total number of children suffering from stunting was 149.2 million (Petermann-Rocha et al., 2022).

The problem of child stunting has recently gained public attention in Malaysia, but there is still a general lack of understanding about this issue (Kok, 2020). Several reports and studies have proven that the percentage of child abuse in Malaysia is high. NHMS 2015 also recorded that the prevalence of stunted children in Malaysia in 2015 was 13.4% (Bahtiar et al., 2021). Another study conducted in 2016 found that the national prevalence of stunted children in Malaysia increased rapidly to 20.7% (Bahtiar et al., 2021). A report by NHMS (Morbidity and National Health) noted that stunting (20.7%) has occurred since 2016 among Malaysian children under five years old (Baharudin et al., 2019). The NHMS conducted by the Malaysian Pediatric Association (MPA) reported that the rate of stunted children increased from 17% in 2006 to 20.7% in 2016, which is about 2 out of 10 children in Malaysia (Baharudin et al., 2019). In 2018, the percentage of Malaysian children also experiencing stunting was recorded as 17.7% compared to other Asian countries by UNICEF.

Aware of the seriousness of this problem, this issue needs to be curbed at an early age through the most accessible platform to achieve it, which is education. Children with stunting will begin their education in preschool. Children should be given early exposure to help so that they are aware of the impact on their potential. Based on past studies, there still needs to be a specific module as a guide to educate preschool children about stunting.

Research Method

The design and development research (DDR) approach, developed by Richey and Klein and comprised three primary phases: need analysis, design, development, and evaluation—was generally used in this work. The second stage of the development of the Nutrition Education Module in Preventing Stunting Problems in Preschool Children is a complete module that will guide preschool teachers and help educate preschool children about stunting.

Based on the findings of the need analysis, there is a need to develop a specific module specifically for preschool teachers who focus on teaching and steps to carry out learning activities in educating preschool children about stunting. After the nominal group technique (NGT) process, this phase continued; an interview session with experts with a background in early childhood education and nutrition will also be carried out to support the findings obtained during the NGT session. The NGT used in the design and development phase is a process of contributing to discussions about the issues and problems and designing a module framework to be developed. Figure 1 shows the phase and method used in the DDR approach.

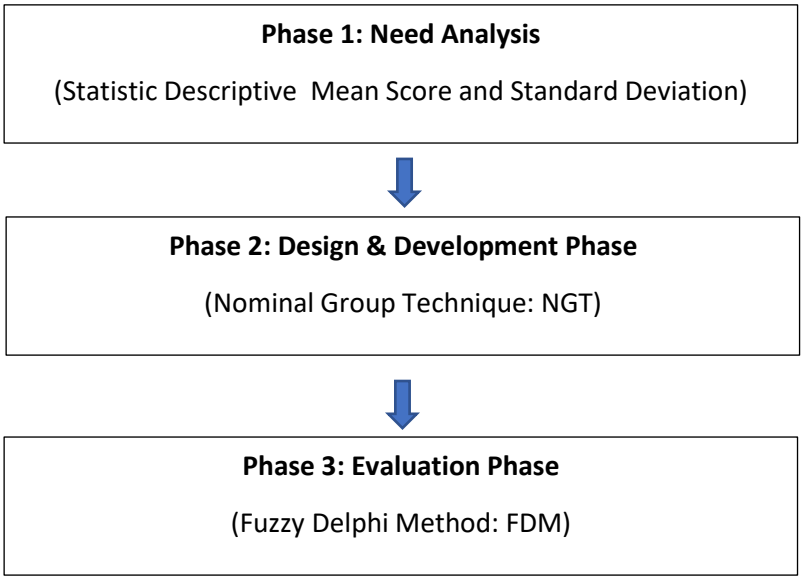

Figure 1: Phase and Method in DDR Approach

Definition of NGT

The nominal group technique (NGT) is a structured approach to brainstorming in groups that promotes participation from all participants and promotes speedy consensus on the relative importance of topics, problems, or solutions. A consensus-building small-group discussion is a structured form of NGT (Anis et al., 2021). It is also a method for gathering data for studies based on in-person interactions. In order to identify and accept the components or elements, it seeks to reach a consensus among experts (Rahman et al., 2022). In addition, NGT is frequently employed in studies to acquire precise results and is not a perceptive viewpoint. Because this strategy can incorporate qualitative methodologies, it is a semi-quantitative and systematic procedure (Anis et al, 2021; Rahman et al., 2022). According to O'Neil and Jackson the procedure starts with the 'acceptance of ideas without judgment' (qualitative) (Anis et al., 2022). It is followed by ranking ideas according to priority using the order of numbers. This study uses NGT to build The Nutrition Education Module to Prevent Stunting Problems among Preschool Children, the main components and elements of preventing stunting problems early as in preschool.

Participants of NGT

There needs to be more clarity about the optimal group size for NGT. The NGT groups should comprise at most five to nine participants, but that large group (9 more than 200) can be accommodated within this process. There are debates among researchers stated that NGT groups as ranging from 9-12 persons (Allen et al., 2004). Besides, Harvey and Holmes (2012) asserted that the ideal group of study participants is 6-12 persons (Holmes, 2012). Therefore, there were 10 experts involved in this NGT session. A panel of experts validated the nutrition education module to prevent stunting problems in preschool children, the main component, and the elements using an online workshop platform (Google Meet). Table 1 shows the list of experts involved in designing the main components and elements in each main component for developing a nutrition education module to prevent stunting problems in preschool children. A group of 8–10 people is optimum for this process. Sub-groups of 8–10 people may be formed if the team or committee is more significant than this (O'Neil & Jackson, 1983). The result of each sub-group may be combined following the initial problem identification stage,

and a second ranking mechanism may be started. In this method, the group's general consensus can be seen (O'Neil & Jackson, 1983). The criteria of the experts involved in the group are:

1. Individuals with extensive experience, background, and experience related to the scope of the study;
2. Timely reliability and suitability to participate;
3. Good communication abilities; and
4. Having more than five years of experience.

In this session, experts discussed the improvement, evaluation, and validation of the main components and elements needed to develop The Nutrition Education Module to Prevent Stunting Problems among Preschool Children framework. The criteria for selecting experts are a person with at least five years' experience in early childhood education, nutrition experts and preschool curriculum experts. Experts were required to validate the main components and elements to design The Nutrition Education Module to Prevent Stunting Problems among Preschool Children framework based on the given questionnaire.

Table 1
List of Experts Involved in NGT

Expert	Level of Education	Fileds of Expertise	Years of Experience
P1	Doctor of Philosophy	Early Childhood Education	29 years
P2	Doctor of Philosophy	Early Childhood Education	20 years
P3	Masters	Early Childhood Education	13 years
P4	Masters	Early Childhood Education	14 years
P5	Degree	Preschool Education	20 years
P6	Degree	Preschool Education	15 years
P7	Degree	Preschool Education	12 years
P8	Degree	Preschool Education	13 years
P9	Degree	Preschool Education	15 years
P10	Degree	Nutrition	8 years

Instrument of NGT

The instrument used in NGT is a questionnaire, and the items generated from the literature review are based on three existing models. The models are SIM Model and Health Belief Model (HBM). This questionnaire has three main parts:

- Part A is the Demographic of The Respondents (experts).
- Part B is the Main Component.
- Part C is the Element Part of Each Component.

The validity and reliability of the questionnaire of the NGT refer to the selection of group members (experts). The experts chosen to fulfil the scope of this study and items discussed in the session NGT related to the experts' background. The validity and reliability of this technique could be improved by determining the criteria for selecting group experts through need analysis and determining correct discussion questions. The NGT questionnaires were given (emailed) to the experts a day before the online NGT workshop. During the NGT session, experts were asked to provide views and opinions on all main components and elements.

They needed to vote by marking on the Likert scale in the NGT questionnaire ranging from 1 (totally disagree) to 7 (totally agree).

Implementation of NGT

The implementation of NGT involves experts selected according to the scope of the study using an online workshop platform (Google Meet). A moderator conducted the online workshop and controlled the interaction in the NGT session. The duration taken by the NGT workshop is about two hours. This duration is an ideal time to implement NGT sessions, which is an ideal period for participants to answer and actively follow the student workshop between two hours to two hours and thirty minutes. In the implementation of NGT, there are five steps of a specific guide that are researcher followed in this research. There are five steps of a specific guide to implementing the NGT session. Table 2 shows the proposed steps to carry out the NGT process.

Table 2
Five steps of specific guide to implement NGT session

Step	**Activity**
Step 1	A description of the study will be conducted by the moderator
Step 2	Process of triggering ideas by study participants
Step 3	Sharing ideas between study participants (experts)
Step 4	Discussion of components and elements of the issues studied
Step 5	The voting process of study participants

In this session, experts discussed the improvement, evaluation, and validation of the main components and elements needed in developing the Nutrition Education Module in Preventing Stunting Problems in Preschool Children. Based on the given questionnaire, a panel of experts was required to select and validate the main components and elements to design the Nutrition Education Module in Preventing Stunting Problems in Preschool Children. The NGT questionnaires were given (emailed) to experts a day before the online NGT workshop. During the NGT session, experts were asked to provide views and opinions on all main components and elements. They need to respond to the NGT questionnaire based on the Likert scale. A descriptive analysis was conducted, such as the score and the percentage, was conducted to determine the percentage of agreement. The percentage of the agreement should be more than 70% (≥70%) as it can be accepted for further reviews in this study.

Data Analysis of NGT

The data analysis process for NGT is straightforward because it refers to the value of the percentage of agreement. Asserts that the percentage of agreement value indicates that each component and element is accepted when the value of the percentage level of agreement is 70% and above. The software used in this stage is Microsoft Excel, based on the template provided to obtain a percentage score value. Table 3 shows five steps of data analysis for NGT. The fifth step is determining each element's position for each component. The elements of each principal component were prioritized based on the ranking number. The higher number would be the most priority element in the list of each principal component.

Table 3
Data Analysis Steps for NGT

Step	Activity
Step 1	Ensuring the number of participants (experts) involved with the study
Step 2	he formation and calculation of score value is based on the templet data analysis of NGT
Step 3	Convert score values into percentage form to get the value of percentage of agreement Percentage (%) = Total of score x 100 / (AxB) A=Total of experts B=Likert scale used i.e. 7 points
Step 4	Determining the acceptance of components and elements based on percentage of agreement
Step 5	Determine the position of the element according to the highest to lowest of percentage of agreement

Result and Discussion

The design phase of the main components of the module framework is based on three existing models. The models involved are Health Belief Model and SIM Models. Three main components were selected based on the two models: Stunting, Nutrition, and Healthy Life Style, to design the module framework as suggested in the literature. The justification for adding other elements to the components, such as the objective, activity, and teacher preparation, focused on the goals and objectives of developing the module framework. It is due to making the module a complete guide and reference for preschool teachers to use while conducting activities.

Verification of main components and elements for each main component based on expert agreement using modified NGT approach

This section has presented the finding for the research question and aims to evaluate and validate the main components and elements module framework. It is to ensure that each element is appropriate and necessary according to the context of nutrition education. Table 4 presents the NGT data findings for determining the main component of the module framework. The details of each main component are discussed and improved in terms of sentence structure, and the language has obtained expert approval. Expert consent is translated by marking the NGT Likert scale found in the questionnaire. After the formation of the main components of the module framework was accepted and agreed upon based on expert error. Stunting, Nutrition, and Healthy Lifestyle assessment are the results obtained for the core components of the module framework. The results of the surveys carried out by experts and the results obtained will be used to produce the main components of the module framework. The components formed in the module framework will guide and reference in implementing the teaching and learning process. Table 4 reveals the score values for the main components used in the module framework through the NGT method analysis.

Table 4
The Score Values for the Main Components

Main Component	Percentage	Acceptance Status	Ranking
Stunting	96%	Accepted	1
Nutrition	89%	Accepted	2
Healthy Lifestyle	82%	Accepted	3

Discussion

Table 4 shows all the components obtained from the literature and related model validated by the expert during NGT session. Experts suggested that researchers should add other elements to the components, such as the objective, activity, and teacher preparation, focused on the goals and objectives of developing the module framework. It is due to making the module a complete guide and reference for preschool teachers to use while conducting activities. In addition, the component is appropriate to the context of the study. Therefore, after obtaining agreement in expert discussions, some elements have been improved regarding sentence structure and language for further research.

Based on the finding for adding objective, activity, and teacher preparation elements to the main component, the findings stated that the module framework is based on the knowledge possessed by students, skills mastered by students, and the ability of students to apply knowledge and skills. To produce effective learning, teachers need to know and be clear about the activity's objectives. States support this statement that a good learning objective should include the following elements: objectives must be more specific, objectives must include knowledge and skills, and objectives that can be measured and assessed through observation and tests. Based on the statement, a guide must have components that have a relationship with each other so that the guide can impact the teaching and learning process.

The findings of the teacher preparation elements also parallel the study's arguments; teachers should prepare before starting the teaching and learning process. Among the preparations that need to be done by teachers are such as determining content standards and learning standards, determining the duration of learning activities, determining the size of student groups, determining the game materials to be used in learning activities, and determining the assessment methods to be used to assess students. This finding is that the preparations that need to be done by the teacher are planning to learn topics, determining learning themes, determining learning objectives, providing learning materials, and setting learning periods appropriate to the student level. Therefore, teacher preparation before the teaching and learning process is an essential component that is one of the determinants of the effectiveness of learning objectives.

All of the results, the components were grouped based on the percentage of acceptance according to the priority. The priority position is crucial because it is one of the procedures to integrate with the concept while developing the module framework. This finding will be used to develop the elements for each principal component of the module framework. It shall be reported in the subsequent publication.

Conclusion

According to the findings, the module framework's main components and suggested elements use the NGT method. An expert validation has been conducted to determine the level of agreement for each selected component and elementary. This framework is intended as a reference and guidance for teachers in designing and mastering practical learning about

health and nutrition education for preschoolers. Therefore, the knowledge, skills, and values can be applied by teachers to children during learning activities. It also helps children improve their knowledge and skills in health and nutrition education, and they can practice it in their daily lives as an initial step to prevent stunting in children.

References

Allen, J., Dyas, J., Jones, M. (2004). Building consensus in health care: a guide to using the nominal group technique, *Br. J. Community Nurs. 9*(3), 110–114

Anis, S. K., Masek, A., Nurtanto, M., & Kholifah, N. (2022). Nominal group technique application towards design of components and elements of non-digital game framework. *International Journal of Evaluation and Research in Education*, *11*(1), 213–223.

Baharudin, A., Man, C. S., Ahmad, M. H., Wong, N. I., Rusydi, M., Radzi, M., Ahmad, N. A., & Aris, T. (2019). *iMedPub Journals Associated Factors to Prevalence of Childhood under Nutrition in Malaysia : Findings from the National Health and Morbidity Survey (NHMS 2016).* 1–9.

Bahtiar, B. A., Ali, A., Yusof, H. M., & Kamarudin, K. S. (2021). Child Development and Nutritional Status of Children Under Five : A Cross-Sectional Study of a Fishermen Community in Terengganu , Malaysia. *J. Gizi Pangan, 16*(28), 91–100.

Global Nutrition Report. (2020). *2020 Global Nutrition Report: Action on equity to end malnutrition. Bristol, UK: Development Initiatives.*

Harvey, N., & Holmes, C. A. (2012). Nominal group technique: an effective method for obtaining group consensus. *International journal of nursing practice*, *18*(2), 188-194.

Kok, D. (2020). Stunting In Malaysia:Costs,Causes & Courses For Action. *JCI-JSC Working Paper*, *May 2019*.

Laureati, M. (2022). Determinants of Preference and Consumption of Healthy Food in Children. *Foods 2022*, *11*(203).

Murtaza, S. F., Gan, W. Y., Sulaiman, N., & Shariff, Z. M. (2018). Factors associated with stunting among Orang Asli preschool children in Negeri Sembilan, Malaysia. *Malaysian Journal of Nutrition*, *24*(2), 215–226.

O'Neil, M. J., & Jackson, L. (1983). Nominal group technique: a process for initiating curriculum development in higher education. *Studies in Higher Education*, *8*(2), 129-138.

Petermann-rocha, F., Rao, N., Pell, J. P., Celis-morales, C., Wong, I. C. K., Ho, F. K., & Ip, P. (2022). *Weight-for-Height , Body Fat , and Development in Children in the East Asia and Pacific Region*. *5*(1), 1–12.

Rahman, N. H. A., Kamarulzaman T. H. T. (2022). Developing Key Performance Indicators for Emergency Department of Teaching Hospitals: A Mixed Fuzzy Delphi and Nominal Group Technique Approach. *Malaysian Journal of Medical Sciences*, *29*(2), 114–125.

World Health Organization. (2006). *The world health report 2006: working together for health*. World Health Organization.

World Health Organization. (2019). *The state of food security and nutrition in the world 2019: safeguarding against economic slowdowns and downturns* (Vol. 2019). Food & Agriculture Org.