ORIGINAL ARTICLE

Types of Nutrition Resource Kit Needed by Community Living Elderly in Malaysian Health Clinic Setting: A Qualitative Study

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ABSTRACT

Introduction: Elderly population is at high-risk to suffer from malnutrition and nutritional inadequacy. The use of nutrition resource kit which provides nutritional guidance could be helpful to improve their dietary intake. There is no study performed previously on the type of nutrition resource kit that can be used to overcome and prevent malnutrition among Malaysian elderly. Therefore, this study aimed to identify the types of nutrition resource kit needed by community living elderly in Malaysian health clinic setting. **Methods:** Qualitative study was conducted to explore the types of nutrition resource kit needed by community living elderly in health clinics. Recruitment for in-depth individual interview targeted elderly aged ≥60 years old who met the inclusion and exclusion criteria and received primary healthcare services in four health clinics in Kuantan, Pahang. Interview questions addressed the knowledge on existing nutrition educational materials, preference for types of nutrition resource kit and opinion on technology-based materials. Data were audiotaped, transcribed verbatim and thematically analyzed using NVivo software version 12. **Results:** 21 participants involved in this study (mean age=67.24 ±6.98 years). Five key themes identified from the data: provision of nutrition resource kit; preference for printed version; eye-friendly; facilitate understanding with diagram; and support for technology-based materials. This study also found that majority of elderly preferred for A5-sized booklet for nutrition resource kit. **Conclusion:** Future development of nutrition resource kit tailored to the need of elderly is needed to deliver nutritional guidance effectively and served as an important reference for them to overcome malnutrition.

Keywords: Malnutrition, Elderly, Community, Nutrition education material

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INTRODUCTION

Malnutrition is a common problem occurred among older people (1); which has always been undetected and undertreated by clinicians (2,3). This condition can interfere with the physiological function of the person including increased risk of morbidity and mortality (4); and elevate the healthcare cost (5). Both independent living and hospitalized older adults can be affected from malnutrition. The number of malnutrition occurrence among elderly differs according to the type of setting. Recent systematic review and meta-analysis of 240 studies revealed a range of 3 to 29% for the prevalence of malnutrition among elderly in different types of setting (6).

In Malaysia, elderly is defined as people aged 60 years and above. Statistical data showed that the percentage of Malaysian elderly population increased from 6.5% in the year 2018 to 6.7% in the year 2019 (7). The percentage of old age is also expected to increase by 14.5% in the year 2040 (8). The increased number of elderly population might further contribute to various health and nutritional problems which can directly impact the society with the demand for healthcare service provision (9).

A range from 25.7% to 64.0% of Malaysian elderly living in community were classified as malnourished

and at-risk (10–13). Malnutrition issue among elderly population can be resolved if it is tackled in a timely manner. This favourable outcome requires efforts from multidisciplinary health professional to manage the causes with the use of social and dietary methods as intervention components (14,15). In order to address malnutrition issue, the elderly population need to be screened for malnutrition and received an appropriate care plan if necessary (16). Nutrition resource kit is useful as a part of a care plan due to its ability to provide nutrition education for the malnourished and at risk elderly patients (17). Studies have also shown that nutrition knowledge among Malaysian elderly was poor (18,19). Nutrition knowledge of older adults can be improved with the provision of educational materials which has been specifically designed for their use (20). Furthermore, the use of printed and other educational materials is primarily effective in increasing awareness and knowledge of elderly (21,22). Hence, provision of nutrition educational materials could be beneficial for the elderly to improve their nutritional status.

Similar to other countries, there are also available educational materials for elderly and general information on malnutrition management and prevention. To the best of our knowledge, Ministry of Health, Malaysia had published several educational materials for elderly such as pamphlet, booklet and poster. However, it is worth to note that none of them is particularly developed for malnourished and at-risk elderly. In addition, no study has been published regarding the availability of nutrition resource kit for malnourished and at-risk Malaysian elderly in health clinic setting. Needs assessment of Malaysian elderly on the type of nutrition resource kit needed also has never been investigated. Therefore, development of nutrition resource kit that provides nutritional guidance specifically for malnourished and at-risk elderly is warranted in order to reduce the prevalence of malnutrition and prevent further adverse consequences in this population. Thus, this research aimed to identify the types of nutrition resource kit needed by the community living elderly in Malaysian health clinic setting.

MATERIALS AND METHODS

Study approach and ethical approval

This qualitative study was conducted in four government health clinics from urban and rural areas in Kuantan, Pahang, Malaysia. Qualitative study was used in order to obtain answer related to experience, meaning and perspective and participant's point of view (23). In this context, the researcher wanted to know the preferred types of nutrition resource kit needed among target population. The health clinics that involved in this study were 'Klinik Kesihatan Indera Mahkota' and 'Klinik Kesihatan Permatang Badak' which classified as urban area; and 'Klinik Kesihatan Sungai Lembing' and 'Klinik Kesihatan Gambang' which classified as rural area. Selection of these two urban and two rural government health clinics was to ensure data is represented from different types of geographical area. Classification of the health clinics chosen was based on the registry of Pahang Health State Department. This study was approved by Medical Research Ethics Committee (MREC) (Reference number: KKM/NIHSEC/P19-1283(11)).

Participants

Participants were recruited through purposive sampling as it allows researcher to select individuals who can provide the best information to achieve the research objective (24). Recruitment of study participants was performed in the selected government health clinic according to the inclusion and exclusion criteria. The criteria were selected according to a study conducted by Shahar et al., (22). Malaysian citizen aged ≥60 years and able to read, write and speak in Malay or English language was included in this study. Meanwhile, elderly who was having any psychiatric and mental disorder and terminal illness was excluded. Once eligibility was confirmed, information about this study was explained by the researcher to the potential participants in order to ensure their understanding. Then, consent was obtained from them before further conducting the data collection.

Study procedure and analysis

Semi structured in-depth individual interview was conducted to explore the types of nutrition resource kit needed by the community living elderly. Semi structured interview allowed participants for a flexibility and freedom to provide opinions, descriptions and details (25). Compared to quantitative research, in-depth interview allows researcher to understand in-depth on participant's view while quantitative only allowed for general understanding at participant's view (26). Besides, interviews are able to enhance participant's thinking and amplify the understanding towards the phenomenon (27). Therefore, qualitative approach was selected to achieve the research aim which enable the researchers to accentuate the participants' needs and the reason behind it. Interview guide was developed and generated by the researcher according to the study objective and was revised by the expert in the area of nutrition and specializes in qualitative methodology. The questions addressed the knowledge on existing nutrition educational materials, preference for types of nutrition resource kit and opinion on technology-based materials (Table I). All interviews were conducted by a researcher in Malay language located in a room available in the health clinic to ensure confidentiality between researcher and participant. Interviews were conducted until the data reached at an acceptable saturation point. Data saturation in qualitative research is the point when no latest or pertinent data occur throughout the data collection process (28). So, in this study, recruitment of participant progressed until data obtained became repetitive and no new information was generated. All interviews were audiotaped and

Table I: Topics addressed in the interview guide

Topics	Questions
1. Knowledge on existing nutrition education materials	What are the types of nutrition educational materials available for Malaysian elderly?
2. Preference towards printed nutrition educational material	What is your opinion regarding the printed nutrition educational materials?
3. Suitability to subject needs	i) What font size do you prefer? ii) What colour do you prefer? iii) Which figures/drawing do you prefer?
4. Opinion on technology-based nutrition educational materials	What is your opinion regarding the technology based educational materials?

transcribed verbatim by the researcher. Participant's name was replaced and coded as number (A1 to A21) to keep it confidential. Thematic analysis was done using Nvivo software version 12.0 (QSR international). It is one of the independent qualitative approaches in which the data is identified and analyzed to discover several themes, selecting which are of interest and reporting it in the results (29). Following data analysis, the coded data and themes were reviewed during a series of discussion with all research team members until finalized themes were produced. According to Creswell et al. (30), having a peer review or debriefing of the data and research process is one of the strategies to ensure the validity of the data.

RESULTS

A total of 21 elderly aged 60 years old and above that received primary care services participated in this study (mean age ± SD: 67.24 ± 6.98 years). Length of interviews differ for each participant. Interviews took between 10 and 23 minutes. In this study, majority participants were Malay and only one Chinese elderly agreed to participate. This is due to the language barrier that occurred between researcher and potential participants especially among other races; which then limit their ability to participate in this study to further provide ample information for an interview. Table II displays the demographic and characteristics of the participants.

Key findings

Five key themes were discovered from the in-depth interviews conducted with participants: 1) Provision of nutrition resource kit, 2) Preference for printed version, 3) Eye-friendly, 4) Facilitate understanding with diagram, and 5) Support for technology-based materials. The themes emerged were displayed as in Fig. 1

Theme 1: Provision of nutrition resource kit

The nutrition resource kit should be provided to elderly directly instead of obtaining or collecting any educational materials by themselves. Analysis revealed that some participants were lacking of self-initiative. They have lack of awareness and were not interested to read the educational materials provided in the health clinic's reading corner.

'I usually stay still at a place. As usual, I just sat there. I don't feel like to take it.' (A19, female, 61 years old, rural health clinic)

'I have not noticed any educational materials related to nutrition. I think that there are limited number of nutrition educational materials in here. There are more

Table II: Demographic data and characteristics of the participants

Characteristics	Overall (n=21)	Male (n=10)	Female (n=11)
Age (year)[a]	67.24±6.98	69.0±7.41	65.64±6.48
Area classification[b]			
Urban	9(42.86)	4(40.0)	5(45.45)
Rural	12(57.14)	6(60.0)	6(54.55)
Marital status[b]			
Married	17(80.95)	9(90.0)	8(72.73)
Widow/Widower	4(19.05)	1(10.0)	3(27.27)
Educational level[b]			
Primary	16(76.19)	6(60.0)	10(90.91)
Secondary	2(9.52)	2(20.0)	0(0)
Tertiary	3(14.29)	2(20.0)	1(9.09)
Smoking status[b]			
Smoking	3(14.29)	3(30.0)	0(0)
Not smoking	18(85.71)	7(70.0)	11(100.0)
Living status[b]			
Alone	2(9.52)	0(0)	2(18.18)
With spouse	6(28.57)	5(50.0)	1(9.09)
With child/children	2(9.52)	1(10.0)	1(9.09)
With family	11(52.38)	4(40.0)	7(63.64)
Job status[b]			
Working	4(19.05)	3(30.0)	1(9.09)
Not working	10(47.62)	1(10.0)	9(81.82)
Pensioner	7(33.33)	6(60.0)	1(9.09)
Access to smartphones and computer[b]			
Yes	12(57.14)	7(70.0)	5(45.45)
No	9(42.86)	3(30.0)	6(54.55)

[a] Data presented as mean±SD
[b] Data presented as n(%)

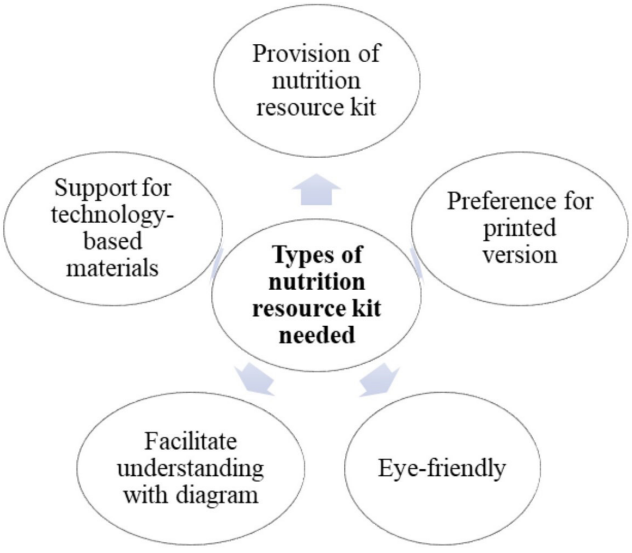

Figure 1: Themes emerged from data analysis

health-related types provided in here.' (A23, male, 69 years old, rural health clinic)

Besides, in current practice, there are limited number of nutrition resource kit provided to patients including the elderly. Some participants voiced out on the unavailability of any nutrition educational materials received. Meanwhile, some participants claimed that they usually received nutrition counselling only which includes individual diet consultation or in a group. They wanted the nutrition educational materials to be provided in order to facilitate nutrition practices.
'I cannot memorize things well. Elderly usually have some problems, forgetful... I do not like this, this needs to be read.' (A17, female, 62 years old, urban health clinic)
'No. They just gave advises and I only listened to it. However, that was the only time that I can memorize it. Once I got home, I only can recall it less. There is no guide book for us. If we do receive any guide book, we can refer it there.' (A23, male, 69 years old, rural health clinic)

This theme indicates the need to provide a nutrition resource kit for the elderly as a guide for them to refer. It could be understood that elderly is likely not to remember things due to aging. Therefore, provision of nutrition resource kit is needed and will be useful for this population.

Theme 2: Preference for printed version
Most participants emphasized on the value of printed version. The valuable of printed version was further detailed out in an open-ended responds:
'Yes, for our health. I do not know what I should eat, how much, the amount that I should consume. If we have the guide, we can control our food intake. What should we eat, what should we avoid.' (A07, male, 70 years old, urban health clinic)

Participants also preferred for printed version due to easy access.
'It is good to have a printed version. So, we can refer to it. It means that we can re-read again.' (A19, female, 61 years old, rural health clinic)
'For me, it is easy to read using the printed version. Haa, we can re-read it.' (A09, male, 60 years old, rural health clinic)

There are several types of nutrition resource kit preferred by participants. However, analysis revealed that majority of elderly preferred for A5-sized booklet for nutrition resource kit. They described the factor of their preference towards A5-sized booklet as follows:
'Easy… Easy to bring. If we want to go anywhere, it is easy to read. It will be hard if using a larger size.' (A13, female, 64 years old, urban health clinic)
'Easy to store, easy to read, not easily getting tear.' (A07, male, 70 years old, urban health clinic)

Participants also wanted a nutrition resource kit with understandable language.
'Malay language, easy.' (A13, female, 64 years old, urban health clinic)

Besides, most participants chose for printed version of nutrition resource kit due to unfavourable for technology-based materials.
'Technology is good for sure but I do not understand. I do not know how to use it. That thing is good but I do not understand the way to use it.' (A09, male, 60 years old, rural health clinic)
'It is okay for young people. Elderly does not need it.' (A19, female, 61 years old, rural health clinic)

This theme identified that most elderly participants preferred for printed version of nutrition resource kit. Consistent with the first theme, the elderly require the printed version for them to refer to it at any time. Elderly also think that the printed version is also accessible to them as most of them did not own any other electronic devices to support the use of educational material. Therefore, printed version of nutrition resource kit suits for elderly that came from both urban and rural area.

Theme 3: Eye-friendly
Some of participants emphasized on vision problem. Thus, they required an eye-friendly material in order to see clearly.
'Our vision became lesser as we aged…' (A10, male, 63 years old, rural health clinic)

Participants also suggested some ideas to enhance the visibility of the nutrition resource kit especially on font size, font type and spacing.
'For the development of nutrition resource kit, the font size should be bigger. Since we are the elderly, our vision became lesser. No details information required. The basic one just enough.' (A23, male, 69 years old, rural health clinic)
'Standard font. We as an elderly do not know how to read this (referring to the connected font). Standard font would be easy to understand the content.' (A15, female, 69 years old, urban health clinic)
'If we already read a lot, we tend to become confuse. The letter itself. So, it would be better like this (referring to broad spacing)...' (A08, female, 62 years old, rural health clinic)

Participants also wanted the use of colour for the nutrition resource kit:
'I like bright colours…'
'Because it would be easy to see clearly as usual…' (A11, female, 62 years old, rural health clinic)
'It is okay to use any types of colour. I do not mind for the types of colour.' (A12, male, 60 years old, rural health clinic)
This theme emphasized the need for an eye-friendly material for elderly. It is commonly known that elderly

usually experience difficulties in reading. Hence, any aspects that could enhance the readability of educational material should be considered especially among elderly.

Theme 4: Facilitate understanding with diagram

Most participants preferred for the real diagram to be used in the nutrition resource kit. However, only two of them preferred the use of animation.

'Oh, it would be real diagram.'

'More understandable… Sometimes, animation could be confusing too.' (A07, male, 60 years old, urban health clinic)

'Animation… If you use someone's picture (referring to real diagram), that individual will be mad at you.' (A25, female, 73 years old, rural health clinic)

This theme highlighted the use of diagram to facilitate understanding of an information. The type of diagram preferred differs among elderly participants. Nevertheless, the use of diagram is known to be advantageous as it can help the elderly to better understand the real meaning of an information given in a nutrition resource kit.

Theme 5: Support for technology-based materials

Although most participants preferred for printed version of nutrition resource kit, four of them indicated preference for technology-based materials. However, the printed version is acceptable to them if there is no option to choose from. In this present study, three out of four participants who were interested in using technology-based materials have already owned a smartphone. Meanwhile, the other one was willing to buy and learn to use the technology-based materials. All of them emphasized on the needs to follow the technological trend and thought that the technology would made their life easier.

'But right now, everything would be using the technology, right?'

'So, we need to follow the trend…' (A13, female, 64 years old, urban health clinic)

'Technology is good as it can be saved in here (referring to mobile phone). If we want to look up, we can just look at it.'

'Printed version will be stored at home. If this, we will always bring it everywhere. So, we can read it everywhere too.' (A12, male, 60 years old, rural health clinic)

Meanwhile, only one of them preferred for technology-based materials due to lack of reading interest.

'An elderly like me is not able to read anymore. When I read, my eyes would be sleepy. So, I hope that it could be made in a form of thumb drive or cd.' (A06, male, 66 years old, urban health clinic)

This theme shows that elderly participant including the one from rural area welcomed the use of technology for nutrition resource kit. Technology has been acknowledged to provide various benefits including making life easier. Therefore, it is understandable that few elderly wanted to have technology-based educational material.

DISCUSSION

This present study has identified type of nutrition resource kit needed by Malaysian community living elderly in health clinic setting. It is recommended to develop specific nutrition educational materials according to subgroups, provided if resources are available (31). Use of in-depth interview to obtain information related to this study objective was beneficial as researcher able to obtain ample information specifically from target population's view (32,33). According to Jewitt et al. (34), an educational material that has been specifically made for patients with particular condition or disease would be able to improve effectiveness and acceptance of it. Besides, dietary behaviour change among elderly can be sustained with the provision of customized nutrition education (35).

In this study, participants addressed the need of provision of nutrition educational materials for them. Several studies had shown positive outcomes on the elderly's nutritional status in addition to the provision of nutrition education (36,37). Besides, elderly population is also known to have lack of self-initiative (38). Hence, this further demonstrates that the nutrition resource kit needs to be provided instead of making an option for them to take it by themselves.

Our study also found that most participants preferred for printed version of nutrition resource kit. This study finding aligns with previous study and survey which indicated the favour of elderly for reading on paper compared to screen (39,40). Printed materials enhance the reader's minds in the development of a physical map where certain information located. Compared to on screen, it is hard to identify the location information which then further prevent the development of an effective cognitive map among the readers (41). Besides, printed version of educational materials have been used to improve satisfaction, knowledge, compliance to treatment and stimulating patients' self-care (42).

This present study also demonstrated the needs of eye-friendly nutrition resource kit for elderly. In this study, participants highlighted on the use of colour, broad spacing, bigger font size and unconnected font. Visual impairment is a common health problem among elderly (43). In line with the usual visual issue among elderly, the characteristics of nutrition resource kit preferred by participants correspond with the attributes recommended to improve the quality of educational materials particularly in terms of suitability and readability of it which indicated by Williams et al. (44). Shahar et al. (22) also mentioned that the use of colour in the development of nutrition educational materials is compulsory in order to attract the interest of target

population. Besides, participants also emphasized on the use of diagram to enhance their understanding. As mentioned by Lau et al. (45), illustrations must be used in order to enhance reader's understanding towards the information. The use of diagram will be able to help patient's understanding on their condition, treatment, instructions (46) and enhance the physician-patient communication (47).

There are no major difference of opinion on the preferred types of nutrition resource kit among elderly participants from both; urban and rural health clinics. However, we found that three out of four participants who preferred the use of technology were from urban health clinics and had tertiary education. It is important to not excluding the opinions from minority which preferred for technology-based nutrition resource kit. Previous local studies had shown a positive feedback and acceptance towards the technology-based nutrition educational package (WE Sihat and WESIHAT 2.0©) which has been developed specifically for elderly (48,49). Ali et al. (48) pointed out that people tend to choose digital form compared to traditional version when being introduced to a new technology. However, it should be noted that the WE Sihat study was conducted in three senior citizen clubs in Klang Valley in which the population is mainly from urban region. Meanwhile, WESIHAT 2.0© was tested for acceptance among elderly with at least secondary education, have basic knowledge on how to use the technology, owned any technology device and have access to Internet. Hence, this might not be applicable for elderly especially among those in rural area and did not own any technology device. The use of total technology-based materials might not fully welcome by all elderly. As mentioned by Chiu et al. (50), the combination of technology-based and the classical or common method of health education could implement positive behavioural change including among those elderly who did not have any prior Internet experience. Hence, in view of our study finding, the use of technology could be incorporated in the nutrition resource kit by making it accessible in online version.

Limitation of this study is no methodological triangulation was performed in this study. However, all data were reviewed and being checked critically by all authors to ensure validity and reliability. One of the strategies to enhance trustworthiness in qualitative research is by involving research team members in the study process including the data analysis (51). Besides, the same researcher performed the interview, transcribed and analysed the data in order to minimize bias along the process. Data collection also was done in different region; which were urban and rural areas. Thus, a newly developed nutrition educational materials based on the study findings might be acceptable for all elderly in different geographical areas. Most importantly, these study findings can be used as a guide to develop a nutrition resource kit suited for the elderly population in health clinic setting.

CONCLUSION

To conclude, this study demonstrated the types of nutrition resource kit needed by community living elderly in health clinic setting. Provision of nutrition resource kit for elderly in an eye-friendly version with the use of diagram is suggested for future development of nutrition resource kit. Our study findings also indicated the support for technology-based materials among the elderly. Therefore, incorporation of technology material in the printed version of nutrition resource kit should be considered.

Performing needs assessment for the types of nutrition resource kit needed by elderly is an early step to enhance the effectiveness of nutrition intervention. Development of nutrition resource kit tailored to the need of elderly is required to convey nutrition information effectively which can further improve their nutritional status.

ACKNOWLEDGEMENTS

This study was supported by Fundamental Research Grant Scheme (FRGS), Ministry of Education (Reference number: FRGS/1/2018/SKK06/UIAM/02/5). Our deepest gratitude to elderly patients who participated in this study.

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