UNIVERSITI PUTRA MALAYSIA

DEVELOPMENT AND VALIDATION OF QUESTIONNAIRE ON KNOWLEDGE, ATTITUDES, PRACTICES AND PERCEIVED BARRIERS RELATED TO NUTRITION CARE PROCESS AMONG CLINICAL DIETITIANS IN MALAYSIA

ZAINI BINTI BAHARI

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By

ZAINI BINTI BAHARI

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirements for the Degree of Master of Science

October 2015
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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Master of Science

DEVELOPMENT AND VALIDATION OF QUESTIONNAIRE ON KNOWLEDGE, ATTITUDES, PRACTICES AND PERCEIVED BARRIERS RELATED TO NUTRITION CARE PROCESS AMONG CLINICAL DIETITIANS IN MALAYSIA

By

ZAINI BINTI BAHARI

October 2015

Chair : Zuriati binti Ibrahim, PhD
Faculty: Medicine and Health Sciences

The introduction of the Nutrition Care Process (NCP) by the American Dietetics Association (ADA) in 2003 provides a standardised framework for clinical dietitians in nutrition care delivery. It is imperative to assess the knowledge, attitudes, practices, and perceived barriers (KAPB) of the clinical dietitians on the NCP. To date, no questionnaire has been developed and validated to assess the KAPB on the NCP. Thus, the present study consisted of two phases, aimed to develop and validate the questionnaire namely Knowledge, Attitudes, Practices, and Perceived barriers on the NCP (KAPB-NCP).

The Phase 1 study which was the development of the KAPB-NCP questionnaire involved the generation of 116 items related to socio-demographic characteristics (7 items), professional development (3 items), organisational culture’s support on the NCP (2 items), knowledge (27 items), attitudes (39 items), practices of the NCP (20 items), and perceived barriers to implement the NCP (14 items). A panel of eight experts who were clinical dietitians and academicians were invited to review the online version of the questionnaire. Content validity was assessed quantitatively and qualitatively using Content Validity Index (CVI) and open-ended comments. A total of 87 out of 100 items from KAPB domains showed excellent content validity ($k^* > .74$) and 10 items showed good ($k^* = .60 - .74$) content validity. Only three items had low CVI ($k^* < .40$). The average CVI for all items in the questionnaire was .90. The questionnaire was finalised to consist of 72 items.

The Phase 2-Step 1 study was the validation of the KAPB-NCP questionnaire established in Phase 1 using factor analysis. It involved a cross-sectional study among 100 clinical dietitians in Malaysia. The KAPB-NCP questionnaire was completed via online survey. Construct validity and reliability of the items in the questionnaire were determined through exploratory factor analysis (EFA) and internal consistency coefficient respectively. Seventy respondents completed the questionnaire, represented a response rate of 70%. EFA identified two underlying factors for attitudes (15 items), one underlying factor for practices (9 items), and two underlying factors for perceived barriers (10 items). Variance
obtained for the factors in attitudes, practices, and perceived barriers was 53.56%, 44.38%, and 60.53% respectively. Internal consistency coefficients for KAPB domain were .526, .890, .872, and .880 respectively. The questionnaire was finalised to consist of 60 items.

The Phase 2-Step 2 study was further validation of the KAPB-NCP questionnaire established in the Phase 2-Step 1 using inferential statistics. A cross-sectional study was conducted among 240 clinical dietitians in Malaysia. A self-administered KAPB-NCP questionnaire was completed online. Of 196 respondents who completed the questionnaire, 93.4% were female. More than two-third of the respondents (67.9%) were working in government hospitals, 21.4% in private hospitals, 6.6% in university hospitals, and 4.1% in health clinics. The mean practice score was 34.65 ± 6.00. The multivariate analysis indicated five factors determine the practice of the NCP namely perceived barriers to implement the NCP ($\beta = -.264, p = <.001$), support from the head of department ($\beta = .225, p = <.001$), attitude towards the NCP ($\beta = .244, p = .001$), utilisation of the NCP at critical care area ($\beta = .153, p = .009$), and years of working ($\beta = .132, p = .024$).

In conclusion, this study has established a valid and reliable questionnaire, namely KAPB-NCP to assess the KAPB on the NCP. It was appeared that the practice of the NCP was likely to be influenced by the individual dietetics professionals and their administrators. Hence, multiple strategies that take into consideration these influencing factors might offer great potential to enhance the implementation of the NCP into dietetics practice.
Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

PEMBENTUKAN DAN PENGESAHAN BORANG KAJI SELIDIK TENTANG PENGETAHUAN, SIKAP, AMALAN DAN TANGGAPAN HALANGAN BERKAITAN PROSES PENJAGAAN PEMAKANAN DALAM KALANGAN PEGAWAI DIETETIK KLINIKAL DI MALAYSIA

 Oleh

 ZAINI BINTI BAHARI

 Oktober 2015

Pengerusi: Zuriati binti Ibrahim, PhD
Fakulti: Perubatan dan Sains Kesihatan

Pengenalan Proses Penjagaan Pemakanan (NCP) oleh Persatuan Dietetik Amerika (ADA) pada tahun 2003 menyediakan rangka kerja yang seragam bagi pegawai dietetik klinikal dalam memberikan penjagaan pemakanan. Ia adalah penting untuk menilai pengetahuan, sikap, amalan, dan tanggapan halangan (KAPB) pegawai dietetik klinikal terhadap NCP. Sehingga kini, tiada borang kaji selidik yang telah dibentuk dan disahkan untuk menilai KAPB terhadap NCP. Oleh itu, kajian ini terdiri daripada dua fasa, yang bertujuan untuk membentuk dan mengesahkan borang kaji selidik Pengetahuan, Sikap, Amalan, dan Tanggapan halangan terhadap NCP (KAPB-NCP).

Fasa 1 kajian yang merupakan pembentukan borang kaji selidik KAPB-NCP melibatkan pembentukan 116 item yang berkaitan dengan ciri-ciri sosio-demografik (7 item), perkembangan profesional (3 item), sokongan budaya organisasi terhadap NCP (2 item), pengetahuan (27 item), sikap (39 item), amalan terhadap NCP (20 item), dan tanggapan halangan untuk melaksanakan NCP (14 item). Satu kumpulan panel yang terdiri daripada lapan pakar yang merupakan pegawai dietetik klinikal dan ahli akademik telah dijemput untuk menyemak borang kaji selidik secara talian. Kesahan kandungan dinilai secara kuantitatif dan kualitatif dengan menggunakan Indeks Kesahihan Kandungan (CVI) dan komen terbuka. Sebanyak 87 daripada 100 item daripada domain KAPB menunjukkan kesahan kandungan cemerlang ($k^* > .74$) dan 10 item menunjukkan kesahan kandungan baik ($k^* = .60 - .74$). Hanya tiga item mempunyai CVI yang rendah ($k^* < .40$). Purata CVI bagi semua item dalam borang kaji selidik adalah .90. Borang kaji selidik telah diputuskan mengandungi 72 item.

Fasa 2-langkah 1 kajian adalah pengesahan borang kaji selidik KAPB-NCP yang dihasilkan pada Fasa 1 dengan menggunakan analisa faktor. Ia melibatkan kajian keratan rentas dalam kalangan 100 pegawai dietetik klinikal di Malaysia. Borang kaji selidik KAPB-NCP telah dilengkapkan melalui survey atas talian. Kesahan konstruk dan kebolehpercayaan item dalam borang kaji selidik telah ditentukan melalui analisis penerokaan factor (EFA) dan pekali konsistensi dalaman. Tujuh puluh responden telah melengkapkan borang kaji
selidik, mewakili kadar respon 70%. EFA telah mengenal pasti dua faktor mendasari sikap (15 item), satu faktor mendasari amalan (9 item), dan dua faktor mendasari tanggapan halangan (10 item). Varian yang diperolehi bagi faktor dalam sikap, amalan, dan tanggapan halangan adalah masing-masing 53.56%, 44.38%, dan 60.53%. Pekali konsistensi dalaman untuk domain KAPB adalah masing-masing .526, .890, .872 dan .880. Borang kaji selidik telah diputuskan mengandungi 60 item.

Fasa 2-langkah 2 kajian adalah pengesahan lanjutan borang kaji selidik KAPB-NCP yang dihasilkan dalam Fasa 2-langkah 1 dengan menggunakan inferensi statistik. Satu kajian keratan rentas telah dijalankan di kalangan 240 pegawai dietetik klinik di Malaysia. Borang kaji selidik KAPB-NCP yang diisi sendiri telah dilengkapi atas talian. Daripada 196 responden yang melengkapkan borang kaji selidik, 93.4% adalah wanita. Lebih daripada dua pertiga daripada responden (67.9%) bekerja di hospital kerajaan, 21.4% di hospital swasta, 6.6% di hospital universiti, dan 4.1% di klinik kesihatan. Min skor praktis adalah 34.65 ± 6.00. Analisis multivariat menunjukkan lima faktor menentukan amalan NCP iaitu tanggapan halangan untuk melaksanakan NCP (β = -.264, p = <.001), sokongan daripada ketua jabatan (β = .225, p = <.001), sikap terhadap NCP (β = .244, p = .001), penggunaan NCP di bahagian penjagaan kritikal (β = .153, p = .009), dan jumlah tahun bekerja (β = .132, p = .024).

Kesimpulannya, kajian ini telah menghasilkan borang kaji selidik yang sah dan boleh dipercayai, iaitu KAPB-NCP untuk menilai KAPB terhadap NCP. Ia telah menunjukkan bahawa amalan NCP berkemungkinan dipengaruhi oleh individu profesional dietetik dan pentadbir mereka. Oleh itu, pelbagai strategi yang mengambil kira faktor yang mempengaruhi mungkin dapat memberikan potensi yang besar untuk meningkatkan pelaksanaan NCP dalam amalan dietetik.
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I certify that a Thesis Examination Committee has met on 2 October 2015 to conduct the final examination of Zaini binti Bahari on her thesis entitled "Development and Validation of Questionnaire on Knowledge, Attitudes, Practices and Perceived Barriers Related to Nutrition Care Process among Clinical Dietitians in Malaysia" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Master of Science.

Members of the Thesis Examination Committee were as follows:

Zalilah binti Mohd Shariff, PhD
Professor
Faculty of Medicine and Health Science
Universiti Putra Malaysia
(Chairman)

Chan Yoke Mun, PhD
Senior Lecturer
Institute of Gerontology
Universiti Putra Malaysia
(Internal Examiner)

Zahara Abdul Manaf, PhD
Associate Professor
Universiti Kebangsaan Malaysia
Malaysia
(External Examiner)

ZULKARNAIN ZAINAL, PhD
Professor and Deputy Dean
School of Graduate Studies
Universiti Putra Malaysia

Date: 17 November 2015
This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Master of Science. The members of the Supervisory Committee were as follows:

Zuriati binti Ibrahim, PhD
Senior Lecturer
Faculty of Medicine and Health Sciences
Universiti Putra Malaysia
(Chairman)

Barakatun Nisak binti Mohd Yusof, PhD
Associate Professor
Faculty of Medicine and Health Sciences
Universiti Putra Malaysia
(Member)

Siti Nur ‘Asyura binti Adznam, PhD
Senior Lecturer
Faculty of Medicine and Health Sciences
Universiti Putra Malaysia
(Member)

BUJANG KIM HUAT, PhD
Professor and Dean
School of Graduate Studies
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Signature: _______________________________________
Name of Chairman of Supervisory Committee: DR. ZURIATI BINTI IBRAHIM

Signature: _______________________________________
Name of Member of Supervisory Committee: ASSOC. PROF. DR. BARAKATUN NISAK BINTI MOHD YUSOF

Signature: _______________________________________
Name of Member of Supervisory Committee: DR. SITI NUR ‘ASYURA BINTI ADZNAM
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<tr>
<td>ADA</td>
<td>American Dietetics Association</td>
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<tr>
<td>AND</td>
<td>Academy of Nutrition and Dietetics</td>
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<tr>
<td>ANOVA</td>
<td>One-way analysis of variance</td>
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<tr>
<td>APHM</td>
<td>Association of Private Hospitals of Malaysia</td>
</tr>
<tr>
<td>CDE</td>
<td>Continuous dietetics education</td>
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<tr>
<td>CFA</td>
<td>Confirmatory factor analysis</td>
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<td>CPG</td>
<td>Clinical practice guidelines</td>
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<td>CVI</td>
<td>Content validity index</td>
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<tr>
<td>DCN</td>
<td>Dietetic care notes</td>
</tr>
<tr>
<td>EBN</td>
<td>Evidence-based nutrition</td>
</tr>
<tr>
<td>EBP</td>
<td>Evidence-based practice</td>
</tr>
<tr>
<td>EFA</td>
<td>Exploratory factor analysis</td>
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<tr>
<td>EMRs</td>
<td>Electronic medical records</td>
</tr>
<tr>
<td>HOD</td>
<td>Head of department</td>
</tr>
<tr>
<td>HUSM</td>
<td>University Sains Malaysia Hospital</td>
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<tr>
<td>I-CVI</td>
<td>Item content validity index</td>
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<tr>
<td>IDNT</td>
<td>International Dietetics and Nutrition Terminology</td>
</tr>
<tr>
<td>$k^*$</td>
<td>Modified kappa statistic</td>
</tr>
<tr>
<td>KAP</td>
<td>Knowledge, attitudes, and practices</td>
</tr>
<tr>
<td>KAPB</td>
<td>Knowledge, attitudes, practices, and perceived barriers</td>
</tr>
<tr>
<td>KAPB-NCP</td>
<td>KAPB questionnaire on the NCP</td>
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<tr>
<td>KMO</td>
<td>Kaiser-Myer-Olkin</td>
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<td>KR-20</td>
<td>Kuder Richardson-20</td>
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<td>MCQ</td>
<td>Multiple choice question</td>
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<td>MDA</td>
<td>Malaysian Dietitian Association</td>
</tr>
<tr>
<td>MLR</td>
<td>Multiple linear regressions</td>
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<tr>
<td>MNT</td>
<td>Medical Nutrition Therapy</td>
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<tr>
<td>MOH</td>
<td>Ministry of Health</td>
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<td>NCP</td>
<td>Nutrition Care Process</td>
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<td>NCPM</td>
<td>Nutrition Care Process and Model</td>
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<td>NMRR</td>
<td>National Medical Research Registry</td>
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<tr>
<td>PAF</td>
<td>Principal axis factoring</td>
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<tr>
<td>PAK</td>
<td>Perceptions, attitudes, knowledge</td>
</tr>
<tr>
<td>$p_c$</td>
<td>Probability of chance agreement</td>
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<tr>
<td>PCA</td>
<td>Principal component analysis</td>
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<td>PES</td>
<td>Problem, etiology, sign and symptoms</td>
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<td>P-P</td>
<td>Probability plot</td>
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<td>QAS-99</td>
<td>Question appraisal system</td>
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<td>RDs</td>
<td>Registered dietitians</td>
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<td>S-CVI</td>
<td>Scale content validity index</td>
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<td>SD</td>
<td>Standard deviation</td>
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<td>SGA</td>
<td>Subjective Global Assessment</td>
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<td>TPB</td>
<td>Theory of planned behaviour</td>
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<tr>
<td>UKMMC</td>
<td>University Kebangsaan Malaysia Medical Centre</td>
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<td>UMMC</td>
<td>University Malaya Medical Centre</td>
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<tr>
<td>US</td>
<td>United States</td>
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<td>VIF</td>
<td>Variance inflation factor</td>
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CHAPTER 1

INTRODUCTION

1.1 Background of the study

A standardised nutrition care process (NCP) has been developed by the American Dietetics Association (ADA), now known as the Academy of Nutrition and Dietetics (AND) since 2003. The purpose of the NCP is to enhance the dietetics practice through the implementation and dissemination of the NCP in the dietetics profession (Lacey & Pritchett, 2003). The introduction of the NCP serves as a standardised process for dietetic professionals, which provides a consistent approach in nutrition care delivery. The standardised process does not mean to provide similar intervention for every patient, instead, each patient is provided with individualised nutrition care according to their nutrition problems. In other words, NCP serves as a consistent framework to deliver nutrition care to the patients, yet, individualised patient care is highly emphasised.

The NCP consists of four distinct but connected steps which are nutrition assessment, nutrition diagnosis, nutrition intervention, and nutrition monitoring and evaluation. Nutrition assessment is a systematic method for obtaining, verifying, and interpreting data needed to identify nutrition problems, their etiologies, and significance. The second step, nutrition diagnosis is a method to determine the nutrition problem. The nutrition diagnosis statement is constructed based on the nutrition assessment findings. Then, the third step which is nutrition intervention is implemented with the purpose of changing nutrition-related behaviour, risk factor, environmental condition, or aspect of health status. Afterwards, the fourth step, nutrition monitoring and evaluation are employed to identify the extent of progress made and to determine whether goals or expected outcomes are being met as well as determining if the interventions need to be modified (Lacey & Pritchett, 2003).

The consistent use and document of the NCP among clinical dietitians would lead to the comparable outcomes data as well as the establishment of the link between quality and professional autonomy (Lacey & Pritchett, 2003). The inclusion of the scientific method and a standardised language system into a standardised NCP is essential to articulate a conceptual model for clinical nutrition practice and documentation as well as to distinguish clinical dietetics’ body of knowledge. The conceptual model of the NCP provides a guideline in providing nutrition care as well as for the documentation purposes (Hakel-Smith & Lewis, 2004).

1.2 Statement of the problem

The adoption of the NCP by the ADA in 2003 is crucial in providing quality nutrition care and effective documentation of nutrition care services. Without a standardised NCP and languages to define the nutrition care provided to the patients, the dietetics practice will remain invisible and the contribution of the clinical dietitians will remain unrecognised in the health care settings (Hakel-
Smith & Lewis, 2004). Therefore, the presence of a standardised NCP and languages implementation in the clinical dietetics practice is very crucial.

Literature showed that there was a limited research conducted regarding NCP implementation in the healthcare settings. Hence, little is known about the utilisation of the NCP in the dietetics practice. In Malaysia, there is no available published data on the awareness and understanding of the NCP concept among clinical dietitians.

Despite the emphasis on the implementation of the NCP when providing nutrition care to the patients, no instrument could be located to measure the quality and how far the implementation of the NCP in the dietetic practice. Instrument investigating on the knowledge, attitudes, practices, and perceived barriers (KAPB) of the clinical dietitians on the NCP could help in providing the idea on how far the implementation of the NCP in the dietetics practice. Without such an instrument, the assessment of the level of the KAPB on the NCP is lacking.

It is vital to note that the instrument needs to be valid and reliable as a way to avoid biased of the data obtained due to the short-comings of the instrument. Literature found that there was often insufficient evaluation of psychometric properties and diagnostic properties of the questionnaire (Rust & Golombok, 2014). The instrument was assumed as having good psychometric properties when it was valid and reliable. It was noteworthy that even the research studies had presented the sound methodology; however, they failed to demonstrate the validity evidences supporting the primary outcome (Cook & Beckman, 2006). The consequence of using the instrument with unknown validity or reliability is that it is impossible to determine whether the instrument is assessing what it supposes to assess (Parmenter & Wardle, 2000).

It was reported that the used of the instruments to empirically examine the hypothesis of the study without sufficient data supporting on their validity and reliability was a common existing problem in the academic areas (Schwab, 1980). This often leads to the difficulties in interpreting whether the statistical findings were believable or not as the instruments may have possibility of producing invalid and unreliable data (Churchill, 1979; Hinkin, 1995). Furthermore, a valid and reliable instrument was assumed as a key element of good assessment of latent variables (Reynolds, 2010) and empirical study (Crook, Shook, Madden, & Morris, 2010). Additionally, the ability to utilise valid and reliable instrument will lead to the accuracy of the data, which was deemed as a foundation to progress in science (Contento, Randell, & Basch, 2002; Reynolds, 2010).

The NCP is considered as a new knowledge in the dietetics field as it was introduced in 2003. As new knowledge emerges, it is crucial to examine the level of understanding and acceptance among the clients as a way for identifying gaps in the respective field. Moreover, it is expected to take about a decade for the full implementation of the NCP in the dietetics profession (Lacey & Pritchett, 2003). Up till now, not much effort has been made to evaluate the degree of understanding, acceptance and implementation of the NCP among clinical dietitians. In these senses, the present study aimed to develop and
validate an instrument which is a questionnaire that can be used to assess the KAPB on the NCP among clinical dietitians in Malaysia.

1.3 Significance of the study

This study produced a valid and reliable questionnaire to assess the level of the KAPB on the NCP among clinical dietitians in Malaysia. It involved the comprehensive assessment of the psychometric properties of the questionnaire which included the assessment of the content and construct validity as well as the internal consistency reliability of the questionnaire. The establishment of a valid and reliable questionnaire is important as it provides assurance to the researchers and respondents about the questionnaire. It was suggested that increased attention on the assessment of validity evidence will enhance the quality of research and patient care (Cook & Beckman, 2006).

Furthermore, the application of the instrument with strong psychometric properties in the scientific research can serve a basis for the greater precision of the data obtained. Hence, the administration of a valid and reliable questionnaire in this study provided the valuable key information about clinical dietitians’ KAPB on the NCP.

Findings from the present study also can contribute to the body of knowledge on the dietetics practice. It fills the gap of shortcoming literature on the NCP studies, especially on Malaysia’s context. It also could differentiate the level of KAPB among respondents and provided the idea on the factors contributed to the implementation of the NCP among clinical dietitians in Malaysia. Consequently, it can provide direction for the enforcement of the strategies required to enhance the implementation of the NCP into clinical dietetics practice. In other words, it can be a good platform in ensuring the complete implementation of the NCP.

In addition, the findings obtained from this study can serve as a baseline data for future research in this area. The involvement of the development phase, followed by validation phase which consisted of two steps of validation processes ensures the quality of the data produced in this study.

Also, the validated instrument produced in this study may be utilised by the dietitians or researchers in other countries or populations. It is hoped that by utilisation of this instrument will contribute to the expansion of the literature on the NCP.

1.4 Research questions

1. What is the validity and reliability of the KAPB questionnaire on the NCP (KAPB-NCP) among respondents?
2. What are the socio-demographic characteristics, professional development, organisational culture’s support, and KAPB scores of the respondents?
3. Is there any association between socio-demographic characteristics, professional development, and organisational culture’s support of the respondents and KAPB scores of the respondents?
4. Is there any association among KAPB scores of the respondents?
5. What are the predictors of the practices of the NCP based on the socio-demographic characteristics, professional development, organisational culture’s support, knowledge, attitudes, and perceived barriers scores of the respondents?

1.5 Objectives

1.5.1 General objective

To develop and validate the KAPB-NCP questionnaire.

1.5.2 Specific objectives

To achieve the general objective, this study was divided into two phases. The objectives for each phase are as follows:

i. To develop the KAPB-NCP questionnaire (Phase 1).

ii. To validate the KAPB-NCP questionnaire (Phase 2).

Each phase has the specific objectives that are further explained in Chapter 3 (Phase 1), Chapter 4 (Phase 2-Step 1), and Chapter 5 (Phase 2-Step 2) of the thesis.

1.6 Hypotheses

1. There was a significant association between socio-demographic characteristics, professional development, and organisational culture’s support and KAPB scores.
2. There was a significant association among KAPB scores.
3. There were significant predictors of the practices of the NCP based on the socio-demographic characteristics, professional development, organisational culture’s support, knowledge, attitudes, and perceived barriers scores.

1.7 Conceptual framework

Figure 1.1 illustrates the conceptual framework of the study. There are two phases of the study which are Phase 1 and Phase 2. Phase 1 refers to the development of the KAPB-NCP questionnaire. Phase 2 refers to the validation of the KAPB-NCP questionnaire, which consists of two steps (Step 1 and Step 2). Step 1 is the determination of the construct validity (using exploratory factor analysis (EFA)) and internal consistency reliability of the items in the questionnaire. Step 2 is the determination of the construct validity based on the inferential statistics.

In Phase 2-Step 2, the independent variables assessed are socio-demographic characteristics, professional development, organisational culture’s support, knowledge on the NCP, attitudes toward the NCP and perceived barriers to implement the NCP. All of these independent variables were analysed with one dependent variable which is practices of the NCP.
Figure 1.1. Conceptual framework of the study
The socio-demographic characteristics are based on the gender, age, academic degree, institution of graduation, place of work, years worked as a clinical dietitian, frequent setting of practice, implementation of the NCP at workplace, individual practice on the NCP, and areas of nutrition specialisation frequently use the NCP. It was found that the level of education had influenced on the implementation of the clinical guidelines. Several studies on the implementation of the EBP guidelines revealed that the adoption of the EBP was influenced by the highest degree earned (Bennett et al., 2003; Bridges, Bierema, & Valentine, 2007; Byham-Gray, Gilbride, Dixon, & Stage, 2005). The number of years working as a clinical dietitian is more likely to be associated with the level of experience. It was indicated that the level of experience had by the professionals may determine the degree of practising the NCP and other evidence-based guidelines (Francke, Smit, de Veer, & Mistiaen, 2008; Lederman, Huffman, & Enrione, 2009; Olshavsky, Vega, Carter, Bunting, & Conkin, 2011).

Moreover, it was recognised that one of the facilitators to practise the NCP was the widespread of the implementation of the NCP in the hospital (Desroches, Lapointe, Galibois, Deschênes, & Gagnon, 2014; Porter, Devine, Vivanti, Ferguson, & O'Sullivan, 2015). Also, it was indicated that the location of the workplace and area of specialty have been associated with the practice of the NCP (Auslander & Enrione, 2013).

The professional development addresses on the respondents’ formal education on the NCP, trainings on the NCP, and self-initiatives or self-training on the NCP. Education and training were found as among the facilitators to practice the NCP (Desroches et al., 2014; Kim & Baek, 2013; Vivanti, Ferguson, Porter, & O'Sullivan, 2011; Vivanti, Ferguson, Porter, O'Sullivan, & Hulcombe, 2015; Porter et al., 2015).

The organisational culture’s support focuses on the support from the hospital management, support from Head of Department (HOD) of Dietetics, support from colleagues, and available resources provided by the organisation. The individuals’ perception, attitudes, and behaviours were influenced by the organisational culture (Cummings, 2004). The support and commitment from the organisation specifically from the hospital management and HOD were found to influence the practice of the NCP (Dodek, Cahill, & Heyland, 2010; Porter et al., 2015; Reinert et al., 2014; Vivanti et al., 2011; Vivanti et al., 2015). In addition, supportive teamwork among colleagues was found to influence the implementation of the guidelines (Desroches et al., 2014; Dopson, FitzGerald, Ferlie, Gabbay, & Locock, 2010; Reinert et al., 2014; Porter et al., 2015; Vivanti et al., 2015). Also, the access of the information at the workplace was identified as one of the facilitators to implement the guidelines (Byham-Gray et al., 2005; Vivanti et al., 2011).

Knowledge and attitudes were identified as the components that must be emphasised prior to the adoption of new practices (Rogers, 1995). Several studies on the NCP revealed that attitudes played significant role in the implementation of the NCP (Auslander & Enrione, 2013; Connell & Molaison, 2008; Desroches et al., 2014; Reinert et al., 2014). The assessment of the perceived barriers is crucial to identify the factors that may inhibit the
implementation of the guidelines (Hakkennes & Dodd, 2008; Grol & Grimshaw, 2003; Melnyk et al., 2004). Several barriers to implement the NCP were identified in the previous studies (Auslander & Enrione, 2013; Desroches et al., 2014; Kim & Baek, 2013; Memmer, 2013; Reinert et al., 2014; Zelig, Byham-Gray, Touger-Decker, Parrott, & Rigassio-Radler, 2011).

1.8 Thesis structure

Chapter 2 of the thesis reviews the literature to provide a background for the research and identify gaps in the body of dietetics knowledge. As illustrated in the Figure 1.1, this study is divided into two phases which is phase 1, and phase 2. Chapter 3 presents the phase 1 of the study, namely development of the KAPB-NCP questionnaire, which aimed to develop and determine the content validity of the questionnaire. Chapter 4 and 5 present the phase 2 of the study, which was the validation of the KAPB-NCP questionnaire. Chapter 4 explains the step 1 of the phase 2, which was the determination of the construct validity using EFA and internal consistency reliability of the items in the questionnaire. Chapter 5 explains the step 2 of the phase 2, which was the determination of the construct validity using inferential statistics. The evaluation on the degree of the understanding, perception, practice, and perceived barriers on the NCP among clinical dietitians was carried out at this step. Finally, Chapter 6 presents the conclusions and recommendations for future research.
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