



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

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October 2015

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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

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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 atas talian. Kesahan kandungan dinilai secara kuantitatif dan kualitatif dengan menggunakan Indeks Kesahan 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 klinikal 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 ($\beta = -.264, p = <.001$), sokongan daripada ketua jabatan ($\beta = .225, p = <.001$), sikap terhadap NCP ($\beta = .244, p = .001$), penggunaan NCP di bahagian penjagaan kritikal ($\beta = .153, p = .009$), dan jumlah tahun bekerja ($\beta = .132, p = .024$).

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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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:

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TABLE OF CONTENTS

	Page
ABSTRACT	i
ABSTRAK	iii
ACKNOWLEDGEMENTS	v
APPROVAL	vi
DECLARATION	viii
LIST OF TABLES	xv
LIST OF FIGURES	xvii
LIST OF ABBREVIATIONS	xviii
CHAPTER	
1	
INTRODUCTION	
1.1 Background of the study	1
1.2 Statement of the problem	1
1.3 Significance of the study	3
1.4 Research questions	3
1.5 Objectives	4
1.5.1 General objective	4
1.5.2 Specific objectives	4
1.6 Hypotheses	4
1.7 Conceptual framework	4
1.8 Thesis structure	7
2	
LITERATURE REVIEW	
2.1 Need for a standardised Nutrition Care Process (NCP)	8
2.2 Standardised process in other healthcare providers	8
2.3 Care process models prior to NCP by ADA	9
2.4 Nutrition Care Process and Model 2003	9
2.5 Benefits of the NCP	12
2.6 NCP and electronic medical records (EMRs)	13
2.7 Knowledge, attitudes, practices, and perceived barriers	14
2.8 Determinants of the practice	15
2.8.1 Socio-demographic characteristics	16
2.8.2 Attitudes toward the guidelines	17
2.8.3 Education and training	17
2.8.4 Organisational culture's support	18
2.8.5 Presence of the barriers	21
3	
PHASE 1: DEVELOPMENT OF THE KAPB-NCP QUESTIONNAIRE	
3.1 Introduction	23
3.2 Specific objective	23
3.3 Methodology	23

3.3.1	Content validity testing of the questionnaire	23
3.3.2	In-depth review with the research team	27
3.3.3	Pre-testing of the questionnaire	27
3.3.4	Summary of the methods for development of the KAPB-NCP questionnaire	29
3.4	Results	30
3.4.1	CVI of the knowledge items in the questionnaire	30
3.4.2	CVI of the attitudes items in the questionnaire	33
3.4.3	CVI of the practices items in the questionnaire	35
3.4.4	CVI of the perceived barriers items in the questionnaire	37
3.4.5	Qualitative review of the content validity	38
3.4.6	Finalised questionnaire	38
3.4.7	Pre-testing of the questionnaire	38
3.5	Discussion	43
3.5.1	Content validity testing of the questionnaire	43
3.5.2	Pre-testing of the questionnaire	44
3.6	Limitations	45
3.7	Summary	45
4	PHASE 2: VALIDATION OF THE KAPB-NCP QUESTIONNAIRE (STEP 1)	
4.1	Introduction	46
4.2	Specific objectives	46
4.3	Methodology	46
4.3.1	Study design and location	46
4.3.2	Sampling method	46
4.3.3	Sampling population	47
4.3.4	Sampling frame	47
4.3.5	Sample size calculation	47
4.3.6	Inclusion criteria	48
4.3.7	Instrumentation	48
4.3.8	Ethical clearance	48
4.3.9	Data collection procedures	49
4.3.10	Data analysis	49
4.4	Results	
4.4.1	Socio-demographic characteristics	51
4.4.2	Professional development of the respondents	53
4.4.3	Organisational culture's support on the NCP	53
4.4.4	Construct validity of the attitudes items	53

	4.4.5	Construct validity of the practices items	55
	4.4.6	Construct validity of the perceived barriers items	56
	4.4.7	Reliability of the knowledge items	56
	4.4.8	Reliability of the attitudes items	57
	4.4.9	Reliability of the practices items	59
	4.4.10	Reliability of the perceived barriers items	60
	4.4.11	Finalised questionnaire	61
	4.5	Discussion	63
	4.5.1	Construct validity	63
	4.5.2	Reliability of the items in the questionnaire	64
	4.6	Limitations	66
	4.7	Summary	66
5		PHASE 2: VALIDATION OF THE KAPB-NCP QUESTIONNAIRE (STEP 2)	
	5.1	Introduction	67
	5.2	Specific objectives	67
	5.3	Methodology	67
	5.3.1	Study design and location	67
	5.3.2	Sampling	67
	5.3.3	Sampling frame	68
	5.3.4	Sample size calculation	68
	5.3.5	Inclusion criteria	69
	5.3.6	Instrumentation	69
	5.3.7	Ethical clearance	69
	5.3.8	Data collection procedure	69
	5.3.9	Data analysis	70
	5.4	Results	73
	5.4.1	Socio-demographic characteristics	73
	5.4.2	Professional development of the respondents	75
	5.4.3	Organisational culture's support on the NCP	75
	5.4.4	Knowledge on the NCP	76
	5.4.5	Attitudes toward the NCP	77
	5.4.6	Practices of the NCP	79
	5.4.7	Perceived barriers to implement the NCP	81
	5.4.8	Knowledge scores according to socio-demographic characteristics, professional development, and organisational culture's support	83
	5.4.9	Attitudes scores according to socio-demographic characteristics, professional development, and organisational	86

	culture's support	
5.4.10	Practices scores according to socio-demographic characteristics, professional development, and organisational culture's support	92
5.4.11	Perceived barriers scores according to socio-demographic characteristics, professional development, and organisational culture's support	96
5.4.12	Correlations between age and years of working with KAPB scores	103
5.4.13	Correlations among KAPB scores	103
5.4.14	Predictors of the practices of the NCP	104
5.5	Discussion	105
5.5.1	Socio-demographic characteristics of the respondents	105
5.5.2	Perceived barriers to implement the NCP	106
5.5.3	Socio-demographic characteristics influence on the KAPB scores	107
5.5.4	Professional development influences on the KAPB scores	107
5.5.5	Organisational culture's support influences on the KAPB scores	108
5.5.6	Correlation among KAPB scores	110
5.5.7	Predictors of the practices of the NCP	111
5.6	Limitations	114
5.7	Summary	114
6	CONCLUSIONS AND RECOMMENDATIONS	
6.1	Conclusions	116
6.2	Recommendations	116
6.2.1	Dietetics professionals	116
6.2.2	Dietetics administrators	116
6.2.3	Future research	117
	REFERENCES	118
	APPENDICES	137
	BIODATA OF STUDENT	194

LIST OF TABLES

Table		Page
2.1	Summary of the models prior to NCP model by ADA	10
3.1	Content structure of the KAPB-NCP questionnaire for content validity testing	25
3.2	Steps evaluated in pre-testing process	28
3.3	Evaluation of the I-CVI of the knowledge items in MCQ format	30
3.4	Evaluation of the I-CVI of the knowledge items in dichotomous format	32
3.5	Evaluation of the I-CVI of the attitudes items in the questionnaire	33
3.6	Evaluation of the I-CVI of the practices items in the questionnaire	35
3.7	Evaluation of I-CVI of the perceived barriers items in the questionnaire	37
3.8	Qualitative analysis of the content validity	38
3.9	Details of the amendments of the questionnaire	39
3.10	Content structure of the KAPB-NCP questionnaire after content validity testing	42
4.1	Socio-demographic characteristics of the respondents	52
4.2	Professional development of the respondents	53
4.3	Organisational culture's support on the NCP	53
4.4	Factor analysis of the items in the attitudes domain	54
4.5	Factor analysis of the items in the practices domain	55
4.6	Factor analysis of the items in the perceived barriers domain	56
4.7	Item-total correlation and internal consistency reliability (KR-20) of the items in the knowledge domain	57
4.8	Item-total correlation and internal consistency reliability (Cronbach's- α) of the items in the attitudes domain	58
4.9	Item-total correlation and internal consistency reliability (Cronbach's- α) of the items in the practices domain	59
4.10	Item-total correlation and internal consistency reliability (Cronbach's- α) of the items in the perceived barriers domain	60
4.11	Content structure of the KAPB-NCP questionnaire after construct validity and internal consistency reliability testing	62
5.1	Scoring of the items in the questionnaire	69
5.2	Variables included into MLR model	71
5.3	Socio-demographic characteristics of the respondents	73
5.4	Professional development of the respondents	75

5.5	Organisational culture's support on the NCP	75
5.6	Distribution of the respondents according to the knowledge on the NCP	76
5.7	Distribution of the respondents according to the attitudes toward the NCP	78
5.8	Distribution of the respondents according to the practices of the NCP	80
5.9	Distribution of the respondents according to the perceived barriers to implement the NCP	82
5.10	Knowledge scores according to socio-demographic characteristics, professional development, and organisational culture's support	83
5.11	Attitudes scores according to socio-demographic characteristics, professional development, and organisational culture's support	87
5.12	Practices scores according to socio-demographic characteristics, professional development, and organisational culture's support	93
5.13	Perceived barriers scores according to socio-demographic characteristics, professional development, and organisational culture's support	97
5.14	Correlations between age and years of working with KAPB scores	103
5.15	Correlations among KAPB scores	103
5.16	Predictors of the practices of the NCP	104

LIST OF FIGURES

Figure		Page
1.1	Conceptual framework of the study	5
2.1	Nutrition Care Process and Model 2003	9
3.1	Flow chart of the methods for development of the KAPB-NCP questionnaire	29



LIST OF ABBREVIATIONS

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

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-Step2) 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.

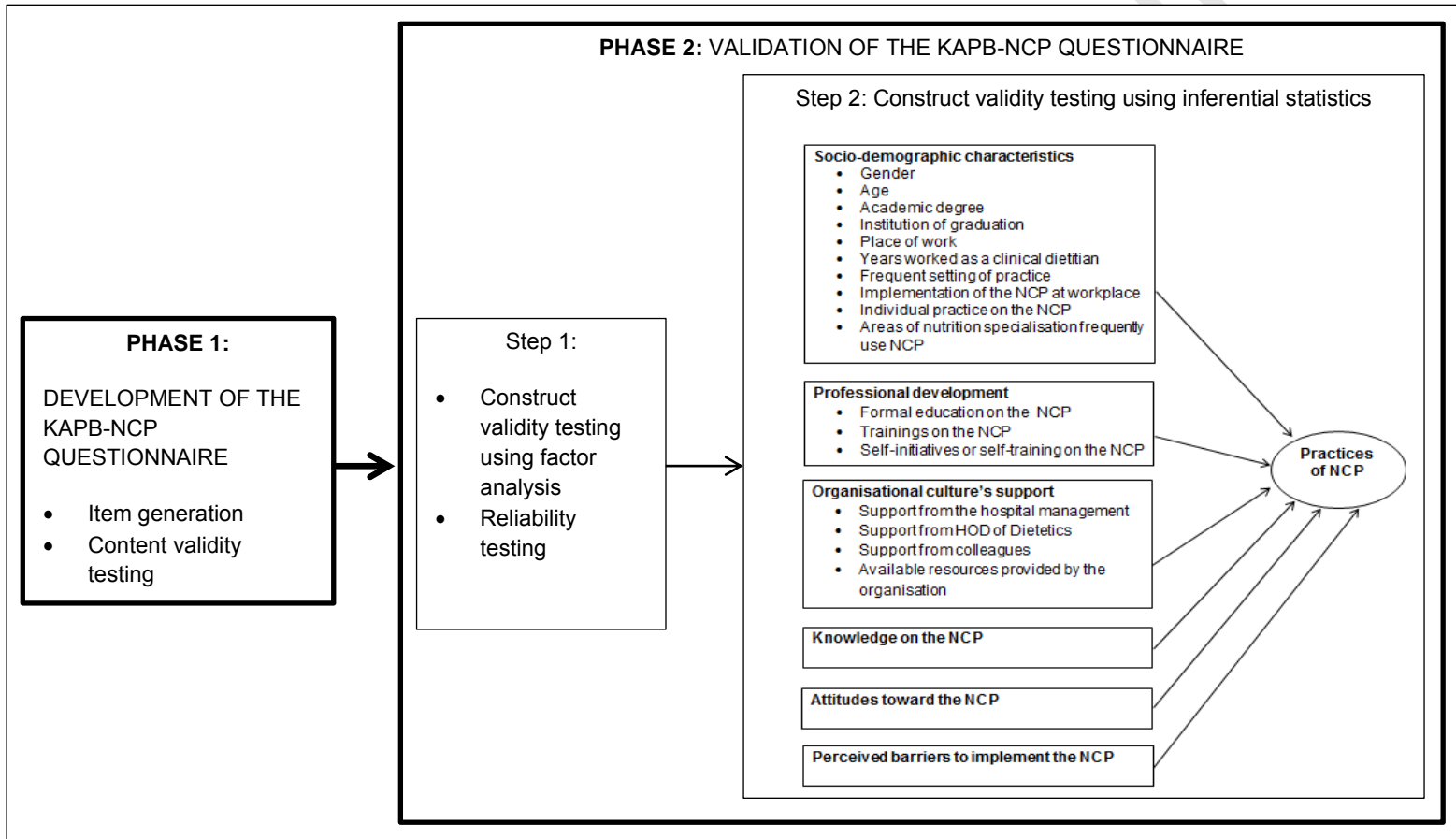


Figure 1.1. Conceptual framework of the study

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 speciality 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 & Enriene, 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.

REFERENCES

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.
- Alleyne, J., & JUMAA, M. O. (2007). Building the capacity for evidence-based clinical nursing leadership: The role of executive co-coaching and group clinical supervision for quality patient services. *Journal of Nursing Management*, 15(2), 230-243.
- Amabile, T. M., Schatzel, E. A., Moneta, G. B., & Kramer, S. J. (2004). Leader behaviors and the work environment for creativity: Perceived leader support. *The Leadership Quarterly*, 15(1), 5-32.
- American Physical Therapy Association. (1998). Guide to physical therapist practice. *Physical Therapy*, 77, 1175-1650.
- Atkins, M., Basualdo-Hammond, C., & Hotson, B. (2010). Canadian perspectives on the Nutrition Care Process and International Dietetics and Nutrition Terminology. *Canadian Journal of Dietetic Practice and Research*, 71(2), e18-e20.
- Auslander, M., & Enrione, E. (2013). Assessing practices and perceptions of board certified specialists in pediatric nutrition about the Nutrition Care Process/International Dietetics and Nutrition Terminology. *Journal of the Academy of Nutrition and Dietetics*, 113(9), A13-A13.
- Babbie, E. (1990). *Survey research methods* (2nd ed.). Belmont, California: Wadsworth.
- Bass, B. M., & Bass, R. (2009). *The bass handbook of leadership: Theory, research, and managerial applications* (4th ed.). New York: Simon and Schuster.
- Becker, P., Lusk, B., Walker, F., & Wills-Gallagher, J. (2009). The design and implementation of an electronic medical record template using standardized language and the nutrition care process. *Journal of the American Dietetic Association*, 109(9), A9.
- Beidas, R. S., & Kendall, P. C. (2010). Training therapists in evidence-based practice: A critical review of studies from a systems-contextual perspective. *Clinical Psychology: Science and Practice*, 17(1), 1-30.
- Bennett, S., Tooth, L., McKenna, K., Rodger, S., Strong, J., Ziviani, J., Mickan, S., & Gibson, L. (2003). Perceptions of evidence-based practice: A survey of Australian occupational therapists. *Australian Occupational Therapy Journal*, 50(1), 13-22.
- Benson, J. (1981). A redefinition of content validity. *Educational and Psychological Measurement*, 41(3), 793-802.

- Berk, R. A. (1990). Importance of expert judgment in content-related validity evidence. *Western Journal of Nursing Research*, 12(5), 659-671.
- Bernstein, I. H., & Nunnally, J. (1994). *Psychometric theory* (3rd ed.). New York: McGraw—Hill.
- Bower, F. L. (2000). *Nurses taking the lead: Personal qualities of effective leadership*. Philadelphia: WB Saunders Company.
- Brady Germain, P., & Greta G, C. (2010). The influence of nursing leadership on nurse performance: A systematic literature review. *Journal of Nursing Management*, 18(4), 425-439.
- Brazill, T. J., & Grofman, B. (2002). Factor analysis versus multi-dimensional scaling: Binary choice roll-call voting and the US supreme court. *Social Networks*, 24(3), 201-229.
- Bridges, P. H., Bierema, L. L., & Valentine, T. (2007). The propensity to adopt evidence-based practice among physical therapists. *BMC Health Services Research*, 7, 103.
- Brown, C. E., Wickline, M. A., Ecoff, L., & Glaser, D. (2009). Nursing practice, knowledge, attitudes and perceived barriers to evidence-based practice at an academic medical center. *Journal of Advanced Nursing*, 65(2), 371-381.
- Brylinsky, C. (1996). The Nutrition Care Process. In L.K.Mahan & S. Escott-Stump (Eds.), *Krause's Food, Nutrition and Diet Therapy* (9th ed.) (pp. 403-423). Philadelphia, PA: WB Saunders Company.
- Bueche, J., Charney, P., Pavlinac, J., Skipper, A., Thompson, E., Myers, E., ... & Ginger, C. J. (2008). Nutrition care process part II: Using the international dietetics and nutrition terminology to document the nutrition care process. *Journal of the American Dietetic Association*, 108(8), 1287-1293.
- Burrowes, J. D., Russell, G. B., & Rocco, M. V. (2005). Multiple factors affect renal dietitians' use of the NKF-K/DOQI adult nutrition guidelines. *Journal of Renal Nutrition*, 15(4), 407-426.
- Buzek, B., & Priest, A. (2009). Implementing the nutrition care process in the hospital setting using electronic health records. *Journal of the American Dietetic Association*, 109(9, Supplement), A9.
- Byham-Gray, L. D., Gilbride, J. A., Dixon, L. B., & Stage, F. K. (2005). Evidence-based practice: What are dietitians' perceptions, attitudes, and knowledge? *Journal of the American Dietetic Association*, 105(10), 1574-1581.
- Cabana, M. D., Rand, C. S., Powe, N. R., Wu, A. W., Wilson, M. H., Abboud, P. C., & Rubin, H. R. (1999). Why don't physicians follow clinical practice

guidelines? *The Journal of the American Medical Association*, 282(15), 1458-1465.

Cabrera-Nguyen, P. (2010). Author guidelines for reporting scale development and validation results in the journal of the society for social work and research. *Journal of the Society for Social Work and Research*, 1(2), 99-103.

Cahill, N. E., Narasimhan, S., Dhaliwal, R., & Heyland, D. K. (2010). Attitudes and beliefs related to the canadian critical care nutrition practice guidelines. *Journal of Parenteral and Enteral Nutrition*, 34(6), 685-696.

Calpin-Davies, P. J. (2003). Management and leadership: A dual role in nursing education. *Nurse Education Today*, 23(1), 3-10.

Carrion, M., Woods, P., & Norman, I. (2004). Barriers to research utilisation among forensic mental health nurses. *International Journal of Nursing Studies*, 41(6), 613-619.

Cattell, R. B. (1966). The scree test for the number of factors. *Multivariate Behavioral Research*, 1(2), 245-276.

Charney, P. (2006). The Nutrition Care Process and standardized language of dietetics: Implications for the nutrition support dietitian. *Support Line*, 28(2), 16-19.

Charney, P. (2007). The Nutrition Care Process and the nutrition support dietitian. *Support Line*, 29(4), 18-22.

Christensen, P. J., & Kenney, J. W. (1995). *Nursing process: Application of conceptual models*. USA: Mosby Inc.

Churchill Jr, G. A. (1979). A paradigm for developing better measures of marketing constructs. *Journal of Marketing Research*, 64-73.

Cicchetti, D. V., & Sparrow, S. A. (1981). Developing criteria for establishing interrater reliability of specific items: Applications to assessment of adaptive behavior. *American Journal of Mental Deficiency*, 86(2), 127-137.

Clark-Carter, D. (1997). *Doing quantitative psychological research: From design to report*. England: Psychology Press/Erlbaum (UK) Taylor & Francis.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Colquitt, J. A., Noe, R. A., & Jackson, C. L. (2002). Justice in teams: Antecedents and consequences of procedural justice climate. *Personnel Psychology*, 55(1), 83-109.

- Comrey, A. L. (1978). Common methodological problems in factor analytic studies. *Journal of Consulting and Clinical Psychology*, 46(4), 648.
- Comrey, A. L. (1988). Factor-analytic methods of scale development in personality and clinical psychology. *Journal of Consulting and Clinical Psychology*, 56(5), 754.
- Comrey, A. L., & Lee, H. B. (1992). *A first course in factor analysis* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum.
- Connell, C., & Molaison, E. F. (2008). Internship preceptors perceptions and use of the Nutrition Care Process. *Journal of the American Dietetic Association*, 108(9, Supplement), A20.
- Contento, I. R., Randell, J. S., & Basch, C. E. (2002). Review and analysis of evaluation measures used in nutrition education intervention research. *Journal of Nutrition Education and Behavior*, 34(1), 2-25.
- Conway, J. M., & Huffcutt, A. I. (2003). A review and evaluation of exploratory factor analysis practices in organizational research. *Organizational Research Methods*, 6(2), 147-168.
- Cook, D. A., & Beckman, T. J. (2006). Current concepts in validity and reliability for psychometric instruments: Theory and application. *The American Journal of Medicine*, 119(2), 166. e7-166. e16.
- Coomarasamy, A., & Khan, K. S. (2004). What is the evidence that postgraduate teaching in evidence based medicine changes anything? A systematic review. *BMJ (Clinical Research Ed.)*, 329(7473), 1017.
- Copes, L., & Ramsay, K. (2010). Using the standardized language for the nutrition care process in the electronic health record to measure and report nutrition care outcomes. *Journal of the American Dietetic Association*, 110(9), A86.
- Corado, L., & Pascual, R. (2008). Successes in implementing the Nutrition Care Process and standardized language in clinical practice. *Journal of the American Dietetic Association*, 108(9, Supplement), A42.
- Costello, A. B., & Osborne, J. W. (2005). Best practices in exploratory factor analysis : Four recommendations for getting the most from your analysis. *Practical Assessment Research & Evaluation*, 10(7), 1-9.
- Craig, C., Barriero, T., Collins, S., & O'Brien, P. (2014). Implementation of the nutrition care process and utilization of the international dietetics and nutrition terminology and electronic health record for data generation. *Journal of the Academy of Nutrition and Dietetics*, 9(114), A70.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16(3), 297-334.

- Crook, T. R., Shook, C. L., Madden, T. M., & Morris, M. L. (2010). A review of current construct measurement in entrepreneurship. *International Entrepreneurship and Management Journal*, 6(4), 387-398.
- Cummings, G. G., MacGregor, T., Davey, M., Wong, C. A., Lo, E., Muise, M., & Stafford, E. (2010). Leadership styles and outcome patterns for the nursing workforce and work environment: A systematic review. *International Journal of Nursing Studies*, 47(3), 363-385.
- Cummings, G. (2004). Investing relational energy: The hallmark of resonant leadership. *Nursing Leadership (Toronto, Ont.)*, 17(4), 76-87.
- Cummings, G. G., Estabrooks, C. A., Midodzi, W. K., Wallin, L., & Hayduk, L. (2007). Influence of organizational characteristics and context on research utilization. *Nursing Research*, 56(4 Suppl), S24-39.
- Davis, L. L. (1992). Instrument review: Getting the most from a panel of experts. *Applied Nursing Research*, 5(4), 194-197.
- Davis, D. A., & Taylor-Vaisey, A. (1997). Translating guidelines into practice: A systematic review of theoretic concepts, practical experience and research evidence in the adoption of clinical practice guidelines. *Canadian Medical Association Journal*, 157(4), 408.
- Desroches, S., Lapointe, A., Galibois, I., Deschênes, S., & Gagnon, M. (2014). Psychosocial factors and intention to use the Nutrition Care Process among dietitians and dietetic interns. *Canadian Journal of Dietetic Practice and Research*, 75(1), e335-e341.
- DeVellis, R.F. (2012). *Scale development: Theory and applications* (3rd ed.). United States: Sage Publications.
- DeVon, H. A., Block, M. E., Moyle-Wright, P., Ernst, D. M., Hayden, S. J., Lazzara, D. J., Savoy, S. M., & Kostas-Polston, E. (2007). A psychometric toolbox for testing validity and reliability. *Journal of Nursing Scholarship*, 39(2), 155-164.
- Dodek, P., Cahill, N. E., & Heyland, D. K. (2010). The relationship between organizational culture and implementation of clinical practice guidelines. *Journal of Parenteral and Enteral Nutrition*, 34(6), 669-674.
- Dopson, S., FitzGerald, L., Ferlie, E., Gabbay, J., & Locock, L. (2010). No magic targets! changing clinical practice to become more evidence based. *Health Care Management Review*, 35(1), 2-12.
- Duffield, C., Roche, M., O'Brien-Pallas, L., Catling-Paull, C., & King, M. (2009). Staff satisfaction and retention and the role of the nursing unit manager. *Collegian*, 16(1), 11-17.
- Eck, L. H., Slawson, D. L., Williams, R., Smith, K., Harmon-Clayton, K., & Oliver, D. (1998). A model for making outcomes research standard

practice in clinical dietetics. *Journal of the American Dietetic Association*, 98(4), 451-457.

- Elenkov, D. S., & Manev, I. M. (2005). Top management leadership and influence on innovation: The role of sociocultural context. *Journal of Management*, 31(3), 381-402.
- Eysenbach, G. (2004). Improving the quality of web surveys: The checklist for reporting results of internet E-surveys (CHERRIES). *Journal of Medical Internet Research*, 6(3), e34.
- Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods*, 4(3), 272.
- Fayers, P., & Machin, D. (2007). *Quality of life: The assessment, analysis and interpretation of patient-reported outcomes* (2nd ed.). England: John Wiley & Sons.
- Field, A. (2009). *Discovering statistics using SPSS*. London: Sage Publications.
- Fleiss, J. L., Levin, B., & Paik, M. C. (2013). *Statistical methods for rates and proportions* (3rd ed.). New Jersey: John Wiley & Sons.
- Floyd, F. J., & Widaman, K. F. (1995). Factor analysis in the development and refinement of clinical assessment instruments. *Psychological Assessment*, 7(3), 286.
- Ford, J. K., MacCallum, R. C., & Tait, M. (1986). The application of exploratory factor analysis in applied psychology: A critical review and analysis. *Personnel Psychology*, 39(2), 291-314.
- Forsetlund, L., Børndal, A., Rashidian, A., Jamtvedt, G., O'Brien, M. A., Wolf, F. M., Davis, D., Odgaard-Jensen, J., & Oxman, A. D. (2009). Continuing education meetings and workshops: Effects on professional practice and health care outcomes. *Cochrane Database Syst Rev*, 2(2).
- Francke, A. L., Smit, M. C., de Veer, A. J., & Mistiaen, P. (2008). Factors influencing the implementation of clinical guidelines for health care professionals: A systematic meta-review. *BMC Medical Informatics and Decision Making*, 8(1), 38.
- Fretheim, A., Schünemann, H. J., & Oxman, A. D. (2006). Improving the use of research evidence in guideline development: 15. disseminating and implementing guidelines. *Health Res Policy Syst*, 4(27), 10.1186.
- Gardner, G., Gardner, A., MacLellan, L., & Osborne, S. (2003). Reconceptualising the objectives of a pilot study for clinical research. *International Journal of Nursing Studies*, 40(7), 719-724.

- Gates, G. E. (1992). Clinical reasoning: An essential component of dietetic practice. *Topics in Clinical Nutrition*, 7(3), 74-80.
- Gifford, W., Davies, B., Edwards, N., Griffin, P., & Lybanon, V. (2007). Managerial leadership for nurses' use of research evidence: An integrative review of the literature. *Worldviews on Evidence-Based Nursing*, 4(3), 126-145.
- Gifford, W. A., Davies, B., Edwards, N., & Graham, I. D. (2006). Leadership strategies to influence the use of clinical practice guidelines. *Nursing Leadership (Toronto, Ont.)*, 19(4), 72-88.
- Godin, G., Bélanger-Gravel, A., Eccles, M., & Grimshaw, J. (2008). Healthcare professionals' intentions and behaviours: A systematic review of studies based on social cognitive theories. *Implement Sci*, 3(36), 1-12.
- Grant, J. S., & Davis, L. L. (1997). Selection and use of content experts for instrument development. *Research in Nursing & Health*, 20(3), 269-274.
- Grant, J., Kinney, M., & Guzzetta, C. (1990). A methodology for validating nursing diagnoses. *Advances in Nursing Science*, 12(3), 65-74.
- Green, S. B. (1991). How many subjects does it take to do a regression analysis. *Multivariate Behavioral Research*, 26(3), 499-510.
- Grol, R., & Grimshaw, J. (2003). From best evidence to best practice: Effective implementation of change in patients' care. *The Lancet*, 362(9391), 1225-1230.
- Guadagnoli, E., & Velicer, W. F. (1988). Relation to sample size to the stability of component patterns. *Psychological Bulletin*, 103(2), 265.
- Gurzick, M., & Kesten, K. S. (2010). The impact of clinical nurse specialists on clinical pathways in the application of evidence-based practice. *Journal of Professional Nursing*, 26(1), 42-48.
- Hagedorn, R. (2001). *Foundations for practice in occupational therapy* (3rd ed.). Edinburgh: Churchill Livingstone.
- Hair, J. F. (2009). *Multivariate data analysis* (7th ed.). New Jersey: Pearson Prentice Hall.
- Hakel-Smith, N., & Lewis, N. M. (2004). A standardized Nutrition Care Process and language are essential components of a conceptual model to guide and document nutrition care and patient outcomes. *Journal of the American Dietetic Association*, 104(12), 1878-1884.
- Hakel-Smith, N., Lewis, N. M., & Eskridge, K. M. (2005). Orientation to nutrition care process standards improves nutrition care documentation by nutrition practitioners. *Journal of the American Dietetic Association*, 105(10), 1582-1589.

- Hakkennes, S., & Dodd, K. (2008). Guideline implementation in allied health professions: A systematic review of the literature. *Quality & Safety in Health Care, 17*(4), 296-300.
- Hall-McMahon, E. J., & Campbell, K. L. (2012). Have renal dietitians successfully implemented evidence-based guidelines into practice? A survey of dietitians across Australia and New Zealand. *Journal of Renal Nutrition, 22*(6), 584-591.
- Hammond, M. I., Myers, E. F., & Trostler, N. (2014). Nutrition Care Process and Model: An academic and practice odyssey. *Journal of the Academy of Nutrition and Dietetics, 114*(12), 1879-1894.
- Hand, R. K., Steiber, A., & Burrowes, J. (2013). Renal dietitians lack time and resources to follow the NKF KDOQI guidelines for frequency and method of diet assessment: Results of a survey. *Journal of Renal Nutrition, 23*(6), 445-449.
- Hardesty, D. M., & Bearden, W. O. (2004). The use of expert judges in scale development: Implications for improving face validity of measures of unobservable constructs. *Journal of Business Research, 57*(2), 98-107.
- Harman, H. H. (1976). *Modern factor analysis*. England: University of Chicago Press.
- Harrington, B., Bowling, E., & DiChello, S. (2009). Clinical dietitian perception of the nutrition care process. *Future Dimensions in Clinical Nutrition Management, 28*(1).
- Heiwe, S., Kajermo, K. N., Tyni-Lenné, R., Guidetti, S., Samuelsson, M., Andersson, I., & Wengström, Y. (2011). Evidence-based practice: Attitudes, knowledge and behaviour among allied health care professionals. *International Journal for Quality in Health Care, 23*(2), 198-209.
- Henson, R. K., & Roberts, J. K. (2006). Use of exploratory factor analysis in published research common errors and some comment on improved practice. *Educational and Psychological Measurement, 66*(3), 393-416.
- Herschell, A. D., Kolko, D. J., Baumann, B. L., & Davis, A. C. (2010). The role of therapist training in the implementation of psychosocial treatments: A review and critique with recommendations. *Clinical Psychology Review, 30*(4), 448-466.
- Hinkin, T. R. (1995). A review of scale development practices in the study of organizations. *Journal of Management, 21*(5), 967-988.
- Hodnett, E. D., Kaufman, K., O'Brien-Pallas, L., Chipman, M., Watson-MacDonell, J., & Hunsburger, W. (1996). A strategy to promote research-

- based nursing care: Effects on childbirth outcomes. *Research in Nursing & Health*, 19(1), 13-20.
- Horn, J. L. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika*, 30(2), 179-185.
- Howitt, D., & Cramer, D. (2007). *Introduction to statistics in psychology*. New Jersey: Pearson Education.
- Hubbard, S. M., & Hayashi, S. W. (2003). Use of diffusion of innovations theory to drive a federal agency's program evaluation. *Evaluation and Program Planning*, 26(1), 49-56.
- Huber, D. L., Maas, M., McCloskey, J., Scherb, C. A., Goode, C. J., & Watson, C. (2000). Evaluating nursing administration instruments. *Journal of Nursing Administration*, 30(5), 251-272.
- Hutchinson, A. M., & Johnston, L. (2006). Beyond the BARRIERS scale: Commonly reported barriers to research use. *Journal of Nursing Administration*, 36(4), 189-199.
- Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, 39(1), 31-36.
- Kaliyaperumal, K. (2004). Guideline for conducting a knowledge, attitude and practice (KAP) study. *Community Ophthalmology*, 4(1), 7-9.
- Kane, M. T. (2001). Current concerns in validity theory. *Journal of Educational Measurement*, 38(4), 319-342.
- Kight, M. (1993). A dietetic-specific diagnostic reasoning approach to communicating in code. *Diagn Nutr Network*, 2, 2-5.
- Kim, E. M., & Baek, H. J. (2013). A survey on the status of nutrition care process implementation in Korean hospitals. *Clinical Nutrition Research*, 2(2), 143-148.
- Kitson, A., Harvey, G., & McCormack, B. (1998). Approaches to implementing research in practice. *Quality in Health Care*, 7(3), 149-159.
- Kitson, A. (1997). Developing excellence in nursing practice and care. *Nursing Standard (Royal College of Nursing (Great Britain) : 1987)*, 12(2), 33-37.
- Kline, P. (1986). *A handbook of test construction: Introduction to psychometric design*. New York: Methuen.
- Kline, P. (2013). *Handbook of psychological testing* (2nd ed.). New York: Routledge.
- Knapp, T. R., & Brown, J. K. (1995). Ten measurement commandments that often should be broken. *Research in Nursing & Health*, 18(5), 465-469.

- Knops, A. M., Vermeulen, H., Legemate, D. A., & Ubbink, D. T. (2009). Attitudes, awareness, and barriers regarding evidence-based surgery among surgeons and surgical nurses. *World Journal of Surgery*, 33(7), 1348-1355.
- Kovner, A. R., & Rundall, T. G. (2006). Evidence-based management reconsidered. *Frontiers of Health Services Management*, 22(3), 3-22.
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational Psychological Measurement*, 30, 607-610.
- Lacey, K., & Cross, N. (2002). A problem-based nutrition care model that is diagnostic driven and allows for monitoring and managing outcomes. *Journal of the American Dietetic Association*, 102(4), 578-589.
- Lacey, K., & Pritchett, E. (2003). Nutrition Care Process and Model: ADA adopts road map to quality care and outcomes management. *Journal of the American Dietetic Association*, 103(8), 1061-1072.
- Lederman, V. G., Huffman, F. G., & Enrione, E. B. (2009). Knowledge of florida nurses and dietitians regarding dietary supplements. *Complementary Therapies in Clinical Practice*, 15(1), 38-43.
- Leon, A. C., Davis, L. L., & Kraemer, H. C. (2011). The role and interpretation of pilot studies in clinical research. *Journal of Psychiatric Research*, 45(5), 626-629.
- Lövestam, E., Orrevall, Y., Koochek, A., Karlström, B., & Andersson, A. (2015). Evaluation of nutrition care process documentation in electronic patient records: Need of improvement. *Nutrition & Dietetics*, 72(1), 74-80.
- Lynn, M. R. (1986). Determination and quantification of content validity. *Nursing Research*, 35(6), 382-386.
- Maaskant, J. M., Knops, A. M., Ubbink, D. T., & Vermeulen, H. (2013). Evidence-based practice: A survey among pediatric nurses and pediatricians. *Journal of Pediatric Nursing*, 28(2), 150-157.
- MacCallum, R. C., Widaman, K. F., Zhang, S., & Hong, S. (1999). Sample size in factor analysis. *Psychological Methods*, 4(1), 84.
- MacDermid, J. C., & Graham, I. D. (2009). Knowledge translation: Putting the "Practice" in evidence-based practice. *Hand Clinics*, 25(1), 125-143.
- MacKenzie, S. B., Podsakoff, P. M., & Podsakoff, N. P. (2011). Construct measurement and validation procedures in MIS and behavioral research: Integrating new and existing techniques. *MIS Quarterly*, 35(2), 293-334.
- Marchionni, C., & Ritchie, J. (2008). Organizational factors that support the implementation of a nursing best practice guideline. *Journal of Nursing Management*, 16(3), 266-274.

- Mason, M., Wenberg, B. G., & Welsch, P. K. (1982). *The dynamics of clinical dietetics*. New York: John Wiley & Sons Ltd.
- Mason, G. M. C., & Attree, M. (1997). The relationship between research and the nursing process in clinical practice. *Journal of Advanced Nursing*, 26(5), 1045-1049.
- Mathieu, J., Foust, M., & Ouellette, P. (2005). Implementing nutrition diagnosis, step two in the nutrition care process and model: Challenges and lessons learned in two health care facilities. *Journal of the American Dietetic Association*, 105(10), 1636-1640.
- McCormack, B., Kitson, A., Harvey, G., Rycroft-Malone, J., Titchen, A., & Seers, K. (2002). Getting evidence into practice: The meaning of 'context'. *Journal of Advanced Nursing*, 38(1), 94-104.
- Melnik, B. M., & Fineout-Overholt, E. (2011). *Evidence-based practice in nursing & healthcare: A guide to best practice*. Philadelphia: Lippincott Williams & Wilkins.
- Melnik, B. M., Fineout-Overholt, E., Feinstein, N. F., Sadler, L. S., & Green-Hernandez, C. (2008). Nurse practitioner educators' perceived knowledge, beliefs, and teaching strategies regarding evidence-based practice: Implications for accelerating the integration of evidence-based practice into graduate programs. *Journal of Professional Nursing*, 24(1), 7-13.
- Melnik, B. M., Fineout-Overholt, E., Fischbeck Feinstein, N., Li, H., Small, L., Wilcox, L., & Kraus, R. (2004). Nurses' perceived knowledge, beliefs, skills, and needs regarding Evidence-Based practice: Implications for accelerating the paradigm shift. *Worldviews on Evidence-Based Nursing*, 1(3), 185-193.
- Memmer, D. (2013). Implementation and practical application of the nutrition care process in the dialysis unit. *Journal of Renal Nutrition*, 23(1), 65-73.
- Miller, P., Miller, N., Faith, J., Lewis, S., & Brezina, A. (2010). Implementation and evaluation of outcomes related to the nutrition care process through the use of electronic health records. *Journal of the American Dietetic Association*, 110(9), A86.
- Mittman, B. S., Tonesk, X., & Jacobson, P. D. (1992). Implementing clinical practice guidelines: Social influence strategies and practitioner behavior change. *Quality Review Bulletin*, 18(12), 413-422.
- Moyers, P. A. (1999). The guide to occupational therapy practice. *American Journal of Occupational Therapy*, 53(3), 247-322.
- Munoz, N., Lepore, D., Bortz, A., Funk, D., & Wixted, D. (2011). Focused nutrition assessment and improved quality of care through the development and implementation of electronic nutrition assessment that

incorporates the nutrition care process standards into electronic health record. *Journal of the American Dietetic Association*, 111(9, Supplement), A74.

- Naumann, S. E., & Bennett, N. (2000). A case for procedural justice climate: Development and test of a multilevel model. *Academy of Management Journal*, 43(5), 881-889.
- Neuman, W.L. (2006). *Social research method: Qualitative and quantitative approaches* (6th ed.). Boston: Allyn and Bacon.
- Nevo, B. (1985). Face validity revisited. *Journal of Educational Measurement*, 22(4), 287-293.
- Newhouse, R. P. (2007). Creating infrastructure supportive of Evidence-Based nursing practice: Leadership strategies. *Worldviews on Evidence-Based Nursing*, 4(1), 21-29.
- Nunnally, J. (1978). *Psychometric theory*. New York: McGraw-Hill.
- Oliveri, R. S., Gluud, C., & Wille-Jørgensen, P. A. (2004). Hospital doctors self-rated skills in and use of evidence-based medicine ? A questionnaire survey. *Journal of Evaluation in Clinical Practice*, 10(2), 219-226.
- Olshavsky, R., Vega, M., Carter, A., Bunting, K., & Conkin, C. (2011). Improving usage of nutrition care process and standardized language in a pediatric setting. *Journal of the American Dietetic Association*, 111(9), A73.
- O'Sullivan, T. A. (2013). Evaluation of an electronic record prototype incorporating the nutrition care process and international dietetics and nutrition terminology. *Nutrition & Dietetics*, 70(3), 188-195.
- Pallant, J. (2010). *SPSS survival manual: A step by step guide to data analysis using SPSS* (4th ed.). England: McGraw-Hill International.
- Parmenter, K., & Wardle, J. (2000). Evaluation and design of nutrition knowledge measures. *Journal of Nutrition Education*, 32(5), 269-277.
- Pepler, C. J., Edgar, L., Frisch, S., Rennick, J., Swidzinski, M., White, C., Brown, T. M., & Gross, J. (2005). Unit culture and research-based nursing practice in acute care. *Canadian Journal of Nursing Research*, 37(3), 66-85.
- Perez, X., Wisnivesky, J. P., Lurslurchachai, L., Kleinman, L. C., & Kronish, I. M. (2012). Barriers to adherence to COPD guidelines among primary care providers. *Respiratory Medicine*, 106(3), 374-381.

- Pett, M. A., Lackey, N. R., & Sullivan, J. J. (2003). *Making sense of factor analysis: The use of factor analysis for instrument development in health care research*. California: Sage Publications.
- Pettigrew, A., Ferlie, E., & McKee, L. (1992). Shaping strategic change-The case of the NHS in the 1980s. *Public Money & Management*, 12(3), 27-31.
- Philibert, D. B., Snyder, P., Judd, D., & Windsor, M. (2003). Practitioners' reading patterns, attitudes, and use of research reported in occupational therapy journals. *American Journal of Occupational Therapy*, 57(4), 450-458.
- Ploeg, J., Davies, B., Edwards, N., Gifford, W., & Miller, P. E. (2007). Factors influencing Best-Practice guideline implementation: Lessons learned from administrators, nursing staff, and project leaders. *Worldviews on Evidence-Based Nursing*, 4(4), 210-219.
- Polit, D. F., & Beck, C. T. (2006). The content validity index: Are you sure you know what's being reported? Critique and recommendations. *Research in Nursing & Health*, 29(5), 489-497.
- Polit, D. F., Beck, C. T., & Owen, S. V. (2007). Is the CVI an acceptable indicator of content validity? Appraisal and recommendations. *Research in Nursing & Health*, 30(4), 459-467.
- Porter, S. R., Whitcomb, M. E., & Weitzer, W. H. (2004). Multiple surveys of students and survey fatigue. *New Directions for Institutional Research*, 2004(121), 63-73.
- Porter, J. M., Devine, A., Vivanti, A., Ferguson, M., & O'Sullivan, T. A. (2015). Development of a nutrition care process implementation package for hospital dietetic departments. *Nutrition & Dietetics*, 72, 205-212.
- Prochaska, J. O., & DiClemente, C. C. (1986). *Toward a comprehensive model of change*. New York: Springer.
- Prochaska, J. M., Prochaska, J. O., & Levesque, D. A. (2001). A transtheoretical approach to changing organizations. *Administration and Policy in Mental Health and Mental Health Services Research*, 28(4), 247-261.
- Quiros, D., Lin, S., & Larson, E. L. (2007). Attitudes toward practice guidelines among intensive care unit personnel: A cross-sectional anonymous survey. *The Journal of Acute and Critical Care*, 36(4), 287-297.
- Rainbird, K., Sanson-Fisher, R., & Buchan, H. (2006). *Identifying barriers to evidence uptake*. National Institute of Clinical Studies (NICS): Melbourne, Australia.

- Raja, R., Engstrom, J., & Silvers, M. (2010). How can dietitians become competent in performing subjective global assessment? One hospital's training programme. In *Proceedings of the Nutrition Society*. Proceedings of the Malnutrition Matters, Joint BAPEN and Nutrition Society Meeting, Cardiff, United Kingdom, Oct. 13-14, 2009.
- Ranjit, K. (2011). *Research Methodology: A step-by-step guide for beginners* (3rd ed.). London: SAGE Publication.
- Rattray, J., & Jones, M. C. (2007). Essential elements of questionnaire design and development. *Journal of Clinical Nursing*, 16(2), 234-243.
- Reinert, R., Leimgruber, A., Magnin, M., Lio, E., Bartolucci, N., & Soguel, L. (2014). Nutrition care process (NCP) and international dietetics and nutrition terminology (IDNT): A Joint academic-clinical project for implementation in a hospital in Switzerland. *Journal of the Academy of Nutrition and Dietetics*, 114(9, Supplement), A17.
- Reynolds, C. R. (2010). Measurement and assessment: An editorial view. *Psychological Assessment*, 22(1), 1-4.
- Rice, W. H., Olsen, M., & Randall, M. (2007). Application of the ADA's nutrition care process and model in the electronic medical record. *Journal of the American Dietetic Association*, 107(8), A87.
- Rice, W. H., Olsen, M., McClure, C., & Carey, L. (2010). Measuring outcomes and effectiveness of the nutrition care process-electronic health record applications for nutrition monitoring and evaluation. *Journal of the American Dietetic Association*, 110(9), A85.
- Richardson, J. T. (2005). Instruments for obtaining student feedback: A review of the literature. *Assessment & Evaluation in Higher Education*, 30(4), 387-415.
- Ring, N., Malcolm, C., Coull, A., Murphy-Black, T., & Watterson, A. (2005). Nursing best practice statements: An exploration of their implementation in clinical practice. *Journal of Clinical Nursing*, 14(9), 1048-1058.
- Roberts, S., & Shiner, R. (2009). Nutrition Care Process in a tertiary teaching hospital: Implementation strategies and impact on clinical productivity. *Journal of the American Dietetic Association*, 109(9), A10.
- Robinson, J. P., Shaver, P. R., & Wrightsman, L. S. (1991). Criteria for scale selection and evaluation. *Measures of Personality and Social Psychological Attitudes*, 1(3), 1-16.
- Rogers, E. M. (1995). *Diffusion of innovations* (4th ed). New York: Free Press.
- Rossi, M., Campbell, K. L., & Ferguson, M. (2014). Implementation of the nutrition care process and international dietetics and nutrition terminology in a single-center hemodialysis unit: Comparing paper vs electronic

- records. *Journal of the Academy of Nutrition and Dietetics*, 114(1), 124-130.
- Ruscio, J., & Roche, B. (2012). Determining the number of factors to retain in an exploratory factor analysis using comparison data of known factorial structure. *Psychological Assessment*, 24(2), 282.
- Rust, J., & Golombok, S. (2014). *Modern psychometrics: The science of psychological assessment* (3rd ed.). London: Routledge.
- Rutledge, D. N., & Donaldson, N. E. (1995). Building organizational capacity to engage in research utilization. *Journal of Nursing Administration*, 25(10), 12-16.
- Sachs, M. (2006). Successful strategies and methods of nursing standards implementation. *Pflege*, 19(1), 33-44.
- Saillour-Glenisson, F., & Michel, P. (2003). Individual and collective facilitators of and barriers to the use of clinical practice guidelines by physicians: A literature review. *Revue d'Epidemiologie Et De Sante Publique*, 51(1 Pt 1), 65-80.
- Sapnas, K. G., & Zeller, R. A. (2002). Minimizing sample size when using exploratory factor analysis for measurement. *Journal of Nursing Measurement*, 10(2), 135-154.
- Schein, E. H. (2010). *Organizational culture and leadership* (4th ed.). California: John Wiley & Sons.
- Schmitt, T. A. (2011). Current methodological considerations in exploratory and confirmatory factor analysis. *Journal of Psychoeducational Assessment*, 29(4), 304-321.
- Schmitt, T. A., & Sass, D. A. (2011). Rotation criteria and hypothesis testing for exploratory factor analysis: Implications for factor pattern loadings and interfactor correlations. *Educational and Psychological Measurement*, 71, 95-113.
- Schwab, D. P. (1980). Construct Validity in Organizational Behavior, in B. M. Staw and L. L. Cummings (eds.), *Research in Organizational Behavior*, 2, (pp. 3-43). Greenwich: JAI Press.
- Senge, P. M. (2006). *The fifth discipline: The art and practice of the learning organization*. New York: Doubleday.
- Sherriff, K. L., Wallis, M., & Chaboyer, W. (2007). Nurses' attitudes to and perceptions of knowledge and skills regarding evidence-based practice. *International Journal of Nursing Practice*, 13(6), 363-369.
- Simon, C., & Faut, C. E. (2009). Lessons learned in applying the nutrition care process to critically ill patients. *Support Line*, 31(2), 9 -13.

- Simpson, S. H., Marrie, T. J., & Majumdar, S. R. (2005). Do guidelines guide pneumonia practice? A systematic review of interventions and barriers to best practice in the management of community-acquired pneumonia. *Respiratory Care Clinics of North America*, 11(1), 1-13.
- Spector, P. E. (1992). *Summated rating scale construction: An introduction*. California: Sage.
- Splett, P., & Myers, E. F. (2001). A proposed model for effective nutrition care. *Journal of the American Dietetic Association*, 101(3), 357-363.
- Squires, J. E., Estabrooks, C. A., Gustavsson, P., & Wallin, L. (2011). Individual determinants of research utilization by nurses: A systematic review update. *Implement Sci*, 6(1), 1-20.
- Stetler, C. B., Ritchie, J., Rycroft-Malone, J., Schultz, A., & Charns, M. (2007). Improving quality of care through routine, successful implementation of evidence-based practice at the bedside: An organizational case study protocol using the Pettigrew and Whipp model of strategic change. *Implement Sci*, 2(3)
- Stetler, C. B. (2003). Role of the organization in translating research into evidence-based practice. *Outcomes Management*, 7(3), 97-103.
- Stordeur, S., Vandenberghe, C., & D'hoore, W. (2000). Leadership styles across hierarchical levels in nursing departments. *Nursing Research*, 49(1), 37-43.
- Straus, S. E., Richardson, W. S., Glasziou, P., & Haynes, R. B. (2005). *Evidence-based medicine: How to practice and teach EBM* (3rd ed.). Edinburgh, UK: Churchill Livingstone.
- Streiner, D. L. (2003). Starting at the beginning: An introduction to coefficient alpha and internal consistency. *Journal of Personality Assessment*, 80(1), 99-103.
- Streiner, D. L. (1994). Figuring out factors: The use and misuse of factor analysis. *Canadian Journal of Psychiatry*, 39, 135-140.
- Streiner, D. L., & Norman, G. R. (2008). *Health measurement scales: A practical guide to their development and use* (4th ed.). United States: Oxford University Press.
- Suen, L. F. (2009). Implementing electronic health records with standardized language for the nutrition care process in acute care hospital. *Journal of the American Dietetic Association*, 109(9, Supplement), A18.
- Sundeen, S. J. (1994). *Nurse-client interaction: Implementing the nursing process*. Toronto: Mosby Incorporated.

- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston: Pearson Education.
- Thomas, D. E., Kukuruzovic, R., Martino, B., Chauhan, S. S., & Elliott, E. J. (2003). Knowledge and use of evidence-based nutrition: A survey of paediatric dietitians. *Journal of Human Nutrition and Dietetics*, 16(5), 315-322.
- Thompson, D. S., O'Leary, K., Jensen, E., Scott-Findlay, S., O'Brien-Pallas, L., & Estabrooks, C. A. (2008). The relationship between busyness and research utilization: It is about time. *Journal of Clinical Nursing*, 17(4), 539-548.
- Treiblmaier, H., & Filzmoser, P. (2010). Exploratory factor analysis revisited: How robust methods support the detection of hidden multivariate data structures in IS research. *Information & Management*, 47(4), 197-207.
- Trombly, L. E., & Rodrigues, L. M. (2008). Implementation of the nutrition care process in the affinity patient charting system. *Journal of the American Dietetic Association*, 108(9, Supplement), A9.
- Trudel, T., McCune, A., Donahue, K., Zuberbuhler, L., Farmer, A., & Mager, D. (2010). Variables influencing adoption of practice-based guidelines in canadian renal dietetic practice. *Journal of Renal Nutrition*, 20(4), 235-242.
- Tsai, S. (2000). Nurses' participation and utilization of research in the republic of china. *International Journal of Nursing Studies*, 37(5), 435-444.
- Udod, S. A., & Care, W. D. (2004). Setting the climate for evidence-based nursing practice: What is the leader's role? *Age*, 30(39), 16.
- van Mameren, H., & van der Vleuten, C. (1999). The effect of a 'don't know' option on test scores: Number-right and formula scoring compared. *Medical Education*, 33(4), 267-275.
- Velicer, W. F., Eaton, C. A., & Fava, J. L. (2000). Construct explication through factor or component analysis: A review and evaluation of alternative procedures for determining the number of factors or components. In R. D. Goffin & E. Helmes (Eds.), *Problems and solutions in human assessment: Honoring Douglas N. Jackson at seventy*. Norwell, MA: Kluwer Academic.
- Vivanti, A., Ferguson, M., Porter, J., & O'Sullivan, T. (2011). Staff knowledge, confidence and perceptions prior to implementation of the Nutrition Care Process (NCP) and International Dietetics and Nutrition Terminology (IDNT). *Journal of the American Dietetic Association*, 111(9), A73.
- Vivanti, A., Ferguson, M., Porter, J., O'Sullivan, T., & Hulcombe, J. (2015). Increased familiarity, knowledge and confidence with nutrition care

process terminology following implementation across a statewide health-care system. *Nutrition & Dietetics*, 72, 222-231.

Walker, R., Cooke, M., Henderson, A., & Creedy, D. K. (2011). Characteristics of leadership that influence clinical learning: A narrative review. *Nurse Education Today*, 31(8), 743-756.

Widaman, K. F. (1993). Common factor analysis versus principal component analysis: Differential bias in representing model parameters?. *Multivariate Behavioral Research*, 28(3), 263-311.

Willis, G. B., & Lessler, J. T. (1999). *Question appraisal system QAS-99*. Research Triangle Institute: Rockville, MD.

Worthington, R. L., & Whittaker, T. A. (2006). Scale development research a content analysis and recommendations for best practices. *The Counseling Psychologist*, 34(6), 806-838.

Yaghmaie, F. (2003). Content validity and its estimation. *Journal of Medical Education*, 3(1), 25-27.

Yava, A., Tosun, N., Çiçek, H., Yavan, T., Terakye, G., & Hatipoğlu, S. (2009). Nurses' perceptions of the barriers to and the facilitators of research utilization in turkey. *Applied Nursing Research*, 22(3), 166-175.

Yi, J. (2009). A measure of knowledge sharing behavior: Scale development and validation. *Knowledge Management Research & Practice*, 7(1), 65-81.

Young, J. M., Glasziou, P., & Ward, J. E. (2002). General practitioners' self ratings of skills in evidence based medicine: Validation study. *BMJ*, 324(7343), 950-951.

Young, J. M., & Ward, J. E. (2001). Evidence-based medicine in general practice: Beliefs and barriers among Australian GPs. *Journal of Evaluation in Clinical Practice*, 7(2), 201-210.

Yukl, G., Gordon, A., & Taber, T. (2002). A hierarchical taxonomy of leadership behavior: Integrating a half century of behavior research. *Journal of Leadership & Organizational Studies*, 9(1), 15-32.

Yura, H., & Walsh, M. B. (1978). *The nursing process: Assessing, planning, implementing, evaluating*. Norwalk, CT: Appleton-Century-Crofts.

Zelig, R., Byham-Gray, L., Touger-Decker, R., Parrott, J. S., & Rigassio-Radler, D. (2011). Impact for continuing education: Applying the Nutrition Care Process and Model and the International Dietetics and Nutrition Terminology for dietitians in long-term care. *Topics in Clinical Nutrition*, 26(3), 268-280.

Zwick, W. R., & Velicer, W. F. (1986). Comparison of five rules for determining the number of components to retain. *Psychological Bulletin*, 99(3), 432.



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