Academic-Service Partnership: Development and Psychometric Evaluation of Achieving Mutual Benefits Scale (AMBS)

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Abstract

Background

The first step for the establishment of academic-service partnership is identification of mutual benefits. The rate of achievement of these benefits reflects the success rate of the partnership. This study aimed develop an achieving mutual benefits scale (AMBS) in nursing academic-service partnership.

Method

First, the concept of mutual benefits was defined and analyzed by the hybrid model approach. Then, the psychometric properties of the scale were evaluated.

Results

Exploratory factors analysis supported six factor with an explained variance of 59.06%. The Cronbach's α , and Omega coefficient of the scale respectively ranged from 0.77 to 0.93, and 0.75 to 0.9. The content validity index of 0.97, and internal consistency of 0.76 were obtained for the final scale.

Conclusions

The findings showed that mutual benefits have different dimensions in nursing academic-service partnership include nursing education, research and services. It is necessary to consider all dimensions in assessing the success rate of these programs.

Background

Academic and service institutions encompass the scarcity of resources in the field of finance, labor, and educational space, etc.[1–3]. The partnership is a great opportunity by which one can overcome these challenges [4, 5]. Academic-Service Partnership, as a kind of inter-institutional partnership, is a strategic relationship between academic and service institutions. The first step for building a university-service partnership is to find the mutual benefits of the partners [6, 7].

The mutual benefits of academic and service partnerships are due to the broad, complex and multidimensional relationships between these institutions [7–9]. Recognizing the mutual benefits is the foundation of forming a successful partnership and ensuring its continuity [7, 10–12]. Mutual benefits can also be used as measures to evaluate the efficacy of the partnership. In other words, the level of mutual benefit determines the degree of success of the partnership [7, 13–15].

There are a lot of literature about nursing partnerships and mutual benefits, but no scale has been developed to measure achieving these benefits as a success criterion for partnership. This study aimed to develop and assess the psychometric properties of the Achieving Mutual Benefits Scale (AMBS) in nursing academic-service partnership.

Methods

The AMBS was devised by (1) defining concept using hybrid model as concept analysis approach (2) item generation based on findings of concept analysis study (3) testing for reliability and validity of AMBS.

Concept Refinement By Hybrid Model

The concept of mutual benefits in nursing academic-service partnership was defined by using the three-phase hybrid model approach. In the first theoretical phase, a comprehensive literature review was performed on documents published from January 1st 2000 through September 25th 2015. This phase yielded to a clear and comprehensive definition of the concept based on the existing literature. The field work phase, data were collected through 18 semi-structured in-depth interviews. Inclusion criteria were having experience in clinical or academic management or academic-service partnership programs for at least two years, and willingness to participate in the research. For the analysis, each interview was recorded. Data collection was continued until data saturation and emergence of categories. The mean duration of the interview was almost 45 minutes. MAXQDA 10 was used for data organization. In final phase, the findings of two previous phases were combined to redefine and provide a final definition of the concept.

Item Generation

The findings of the concept analysis study were used to generate an item pool for AMBS. The item pool was assessed and negotiated by the research team in three sessions. Overlapping or repetitive items were either deleted or combined. The research team strived to choose the clearest and most relevant items.

AMBS Reliability And Validity

The face validity of the AMBS was evaluated both qualitatively and quantitatively. Qualitative face validity evaluation was performed by 10 participants. They were asked to read each item loudly and explain their understanding of it. Moreover, they were asked to comment on the difficulty, relevancy, and ambiguity of the items. Items were edited and reworded based on their comments. Then, the quantitative item impact method was used to identify the importance of each item. Impact scores of 1.5 or higher showed that the intended item was appropriate [16, 17]. Moreover, item clarity and comprehensibility were improved by striving to editing and rewording.

Fifteen experts in the areas of instrument development and partnership in nursing were invited to qualitatively and quantitatively assess the content validity of the AMBS. For qualitative content validity assessment, the experts were asked to assess the grammar, wording, item allocation, and scaling of the scale. On the other hand, quantitative content validity assessment was done by calculating the Content

Validity Ratio (CVR) and the Content Validity Index (CVI) for each item. CVR of each item was calculated by asking the fifteen experts to score the items by using a three-point scale: “essential”, “useful but not essential”, and “not essential”. According to Lawshe, when the number of experts is fourteen, items with a CVR value of 0.49 or higher are considered appropriate [18]. Afterwards, the CVI of each item was determined by using the Waltz and Bussel’s criteria [19, 20]. Accordingly, the experts were invited to determine the relevancy of the items on a four-point Likert-type scale (not relevant: 1; quite relevant: 2; relevant: 3; and completely relevant: 4). The CVI of each item was then calculated through dividing the number of experts who had considered the item as either relevant or completely relevant by their total number. Items with a CVI of less than 0.78 were removed from the scale. Finally, the mean CVI of all the items were used to calculate the scale-level CVI/Averaging Calculation Method (S-CVI/ Ave). Polit and Beck recommended that S-CVI/Ave of 0.9 or greater reflect excellent content validity [20].

Exploratory factor analysis was conducted to assess construct validity of 68-item AMBS. We used the Principal Axis Factoring with a Varimax rotation. The number of factors was established based on eigenvalues over 1.0. The internal consistency of the whole scale and subscales was evaluated using Cronbach’s Alpha and Omega coefficient. Subscales were considered acceptable as a consistent measure if Cronbach’s Alpha and Omega coefficient ≥ 0.70 . Statistical analyses were conducted with IBM SPSS Statistics 25.0 software. The minimum sample size for factor analysis is equal to the number of items multiplied by [21]. Study subjects were recruited by the simple random sampling method. Primarily, a comprehensive list of all clinical directors, academic managers and some nurses in school of nursing and midwifery and educational hospitals affiliated to Mashhad University of Medical Sciences, Iran, was created and then a random sample of 400 subjects were asked to fill out the AMBS. Inclusion criteria were having a clinical or academic management experience or having experience in collaborative programs between clinical and academic nursing institutions for at least two years and willingness to participate in the research. Finally, 345 completely-filled scales were included in the final analysis. Researcher transferred the information into SPSS file. Missing values were substituted by the digit three, which was the median of the Likert scale. The exploratory factor analysis with Varimax rotation was performed. The Bartlett’s test of Sphericity, the Kaiser Meyer-Olkin (KMO) test, as well as the scree plot and eigenvalues were used to respectively determine the appropriateness of the factor analysis model, the sampling adequacy, and the number of factors. The minimum factor load of 0.3 was employed to maintain the items in the extracted factors.

The reliability of the AMBS was evaluated by the internal consistency and the stability assessment techniques. The result of internal consistency assessment is reported as Cronbach’s alpha and Omega coefficient [22, 23]. Stability assessment was performed by test-retest technique. Burns and Grove recommend a two-week interval for test-retest stability assessment [24]. The current study participants completed the AMBS twice with a two-week interval in between. The correlation between the test and the retest scores was evaluated by the Interclass Correlation Coefficient (ICC). ICCs of 0.8 or higher denote satisfactory stability [25].

Results

The concept of MB was defined by the hybrid model. Definition of MB according to the results of the concept analysis study is synergy in training and empowering of nursing staff, dynamics in nursing science and practice, and the production and utilization of beneficial knowledge into practice. The antecedents of MB include development of research and educational interactions, necessity for human empowerment, necessity for development of nursing services. The main consequences of MB include improvement of nursing human source, improvement of nursing services, and promotion of partners' satisfaction.

The primary item pool consisted of 87 items in the three domains of MB and eight sub-domains. After frequent assessment by research team, the final item pool included 53 items. These 53 items were arranged in a scale format.

Face Validity

All items had an impact score of more than 1.5. Moreover, the panel of experts recommended the combination of four items and added two more item to the scale. Moreover, they recommended many revisions to the face of the items which were revised accordingly.

Content Validity

One item was removed from the scale because of a low CVR of 0.49. All items had CVI (I-CVI) of more than 0.87. The scale-level CVI (S-CVI) of the whole AMBS was 0.97. According to expert panel 2 items were broken into two items for making clearer and increasing precision in measuring the concept. Also 11 items were corrected in terms of writing style. 12 items were added to the scale to increase content validity. All changed and added items were assessed in terms of face validity by 10 participants and all of them had acceptable face validity. Finally, 68 items remained in the scale. Then this version was assessed for construct validity. Figure 1 shows a summary of the scale development and psychometric evaluation.

Construct Validity

Item analysis

The inter correlations among items indicated that the obtained data could be applied for explanatory factor analysis. In addition, the KMO was 0.87 and Bartlett's test was significant, indicating that factor analysis was suitable for the data.

Exploratory Factor Analysis

Factors with an eigenvalue of greater than one were extracted. The scree plot showed a six-factor structure for the scale (Fig. 2). The suppressed point of 0.3 was considered as the minimum factor load to keep the items in the extracted factors. A summary of the six-factor with 44 items explaining the 59.06% of the variance after Varimax rotation. Items were assigned to the factors which had the greatest factor load (table 1). Items with total corrected correlation less than 0.3 or extraction value less than 0.5 were deleted [24, 26, 27]. The items of the AMBS were scored on a five-point Likert-type scale on which one stands for “never equal to 1” and five stands for “always equal to 5”. Accordingly, the total score of the AMBS ranges from 44 to 220; while higher scores show greater achieving mutual benefits.

Reliability

The values of Alpha and Omega for the AMBS were acceptable (Table 2). Also, the ICC between the test and retest measurements was 0.76 (P value = 0.001). These findings demonstrated the high reliability of the AMBS.

Discussion

To the best of the researchers' knowledge, there is no instrument to evaluate the achievement rate of mutual benefits in academic-service partnership. This study was conducted to develop and assess the psychometric properties of AMBS. The designed scale can measure the achievement rate of these benefits in six dimensions. In this study, we evaluated the validity, face, content, and construction. In addition, we employed internal consistency methods (alpha and omega-coefficient) and test-retest to assess the reliability of this scale. The results of this study showed that AMBS is a valid and reliable tool.

Synergy in research as an AMBS dimension includes those that can extend the research skills of clinical colleagues and conduct collaborative research projects based on clinical challenges. Engelke et al. considered the academic-service research synergy as a must. They also considered the successful collaborative research programs as a foundation for evidence-based practice and utilization of scientific evidence in the practice setting. They suggested the research mentors from the school of nursing to provide guidance for novice researchers in the hospital and assist them with publication [28]. According to the first dimension of AMBS, research synergy can be acquired by conducting some workshops to develop clinical nurse's research skills and forming shared clinical problem-based research team. Conducting research about education is another field for the academic-service research synergy leading to educational standard improvement. However, based on our participants' experience, weak interactions between clinicians and academics is a serious barrier to establish this kind of partnership.

Synergy between managers in students training and access to supportive learning environment are the other dimensions of AMBS. The items of these two dimensions are concerned with the partnership between clinical and academic managers to gain access to professional competent students in a

supportive learning environment. Taylor asserted that the collaborative partnership between the university and hospital can facilitate the clinical learning environment for both students and clinical staff. In addition, through this collaborative collaboration, academic and clinical administrators build on a collaborative curriculum for student and staff learning, relying on capacity and resources for cross-teaching. The clinical staff members play an important role in the education of undergraduate nursing students as a mentor, and seize an opportunity to develop their knowledge under nursing instructors' support. In addition, the students' clinical nursing education is provided in a supportive learning environment; therefore, staff and student satisfaction, clinical competency, and safer quality caring are certainly increased [29–31], which are consistent with recent two mentioned dimensions in the present study.

Improving human resources is another dimension of our scale. Academic and service executives both strive to reach qualified and knowledgeable employees who meet health care requirements. Creating recurrent education courses for clinical nurses in collaboration with the School of Nursing is an important benefit of academic and service partnership [32], which is in line with the fourth dimension of the present study. Similarly, other studies have suggested that hospital and university partnerships serve as a valuable framework for reforming nursing curricula and meeting health care requirements and nursing competencies for models of intensive care services delivery. The best ways of learning to train competent human resources are identified through this type of partnership [33].

Nursing management and improvement of nursing services have been mentioned as other aspects of AMBS in numerous partnership-related studies. Franco et al. asserted that sharing resources, expertise, knowledge, and experience through inter-organizational collaboration is ultimately an excellent opportunity to deliver broad, high-quality health services [34]. Concerning with limited academic-service partnership as well as extreme tendency of nursing postgraduates to work in academic positions, the present study includes items related to their cooperation, particularly Ph. D graduates, with educational hospitals to improve nursing care and have management positions. Other studies also underscore the development of health services at all levels of prevention as an important goal of academic and service partnership [35, 36].

The last dimension in this study is filling the gap between theory and practice which is a serious challenge in nursing. Freundl et al. stated that the academic service participation based on real clinical requirements plays a role in improving and refining nursing curricula. This results in skilled nurses training, and high quality evidence-based care [37] which are in line with the latest dimension in the present study.

Conclusion

This study led to the development of a valid and reliable scale with six dimensions consisting of 44 items. The AMBS can assess the rate of achievement to mutual benefits in academic-service partnership in dimensions of research synergy, student training, supportive learning environment, staff improvement,

management and service improvement, and, bridge theory-practice gap. So clinical and academic managers can use this scale to evaluate partnership.

Abbreviations

CVI: Content validity index; I-CVI: Item content validity index; S-CVI: Scale content validity index; CVR: content validity ratio; AMBS: Achieving Mutual Benefits Scale; MB: Mutual Benefits

Declarations

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Availability of data and materials

All data supporting the presented findings are included in this published article.

Authors' contributions

All authors have agreed on the final version and meet at least one of the following criteria as recommended by the International Committee of Medical Journal Editors: substantial contributions to conception and design (MS, FHN), acquisition of data (MS), or analysis and interpretation of data (MS, FHN, HK, FN, HS), drafting the article or revising it critically for important intellectual content (MS, FHN, HK, FN, HS). All authors read and approved the final manuscript.

Ethics approval and consent to participate

The study was approved by Ethics Committee of Mashhad University of Medical Sciences (No. IR.MUMS.REC.1394.254).

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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Figures

Figure 1

A summary of the scale development and psychometric evaluation.

Figure 2

Scree plot.