RESEARCH ARTICLE

Designing a Comprehensive Model of Elderly-Friendly Hospitals in IRAN

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ABSTRACT

Introduction & Objective: Iran, like many other countries, is experiencing an increase in the elderly population. The elderly are more vulnerable than others and it is difficult to care for them during hospitalization. With the increase in the number of diseases in the elderly, elderly-friendly hospitals are more considered. This study aimed at designing a comprehensive model of elderly-friendly hospitals in Iran.

Method: This exploratory study was performed on 408 physicians, nurses, and paramedics in Iran selected by cluster sampling. First, the initial model was designed based on the review of existing studies, texts, patterns, and tools. The psychometric test was then performed through validity (face validity, content validity, construct validity, and confirmatory factor analysis) and reliability (internal correlation and stability) measurements. The final model was then introduced following approval by experts. Data analysis was performed by SPSS 22 and Amos software.

Results: Of the studied samples, 58.3% had a master's degree or higher. The results validity (content validity, face validity, construct validity, and confirmatory factor analysis) and reliability (internal consistency (α=90%) and stability (0.91)) measurement approved the designed model of an elderly-friendly hospital with 47 items and 7 dimensions. The dimensions of this model included care ethics, physical environment, care process, emotional and behavioral environment, organizational support, service delivery systems, and policy-making. The policy-making dimension with the coefficient of 0.63 showed the highest effect in the designed model.

Conclusion: The designed model is a suitable and approved Iranian model to design elderly-friendly hospitals. The use of the presented model in the cultural context of Iran is recommended for hospitals.

INTRODUCTION

Aging is a natural and inseparable stage of human life [1]. Aging has become more and more a global phenomenon since the beginning of the third millennium, [2]. Improving the health of people and advances in medicine have led to an increase in life expectancy and, consequently, an increase in the number of the elderly [3]. Historically, there have been more young people in the world with an average age of twenty [4]. However, regarding the current generation, the average age of the world's population has doubled from the average age of 22 years in 1975 to more than 40 years by 2050 and for the first time in history, the old people population will outnumber the young people [5]. This increasing trend in the world's elderly population is common in both developed and developing countries [6]. According to the latest report of the Statistics Center of Iran, the elderly population in 2016 was about 7.5 million [7]. Based on the official forecasts of international organizations, Iran, as a developing country, is in the process of age-structural transition, in which there is a shift from young to old age and will happen soon [8]. In its 2012 demographic report, the World Health Organization (WHO) warned of the aging population in Iran and stressed that the health system must be prepared for this drastic demographic change in the future [9]. The costs of health care services and the average length of hospital stay of the elderly are higher than the general population [10]. However, the elderly are not satisfied with the quality of services provided by hospitals, and

also most hospitals are not elderly-friendly hospitals [11]. Therefore, providing elderly-friendly hospitals is important in order to promote the overall health of the elderly [12].

Elderly-friendly hospitals were designed according to the needs of the elderly and their physical environment is effective for the comfort, safety, and independence of the elderly [13-15].

The WHO has defined the basis for elderly-friendly hospitals with three main areas:

1- Information, education, communication, and training staff and familiarizing them with the issues regarding elderly healthcare in healthcare centers of elderly patients

2- Health care service systems, including acceptance and adaptation of the actions of healthcare service centers with services considering the special needs of the elderly and continuing care for the elderly through updated medical reports.

3- Appropriate physical environment, clean and comfortable environment, and easy to access according to the special requirements of the elderly and as much as possible in accordance with the general standards of environmental architecture design [16].

Park and Brand conducted a study entitled " An Elder-Friendly Hospital: Translating a Dream into Reality " in Canada. The introduced hospital was designed based on four factors: policies and processes, healthcare systems, social behaviors, and the physical environment [17].

Chiou and Chen conducted a study in Taiwan entitled "Towards Age-Friendly Hospitals and Health Services ", in which a framework including factors, such as hospital policy and management, services and communications, physical environment and space, and the health care process was introduced considering strategies to expand the activities of elderly-friendly hospitals [18].

Wong et al. in Canada conducted a study entitled "System-Wide analysis using a Senior- Friendly Hospital Framework Identifies Current Practices and Opportunities for Improvement in the Care of Hospitalized Older Adults". In this study, the five factors of organizational support, care process, emotional and behavioral environment, ethics in medical care and research, and physical environment were emphasized [19].

In Korea, Kim et al. conducted a study entitled "Development of the Korean framework for senior-friendly hospitals", in which they explained the factors, such as hospital management policy, care service process, communication, and physical environment.

Ahmadi-Teymourlouy et al. in their study entitled "Toward Age-Friendly Hospitals in Developing Countries: A Case Study in Iran" evaluated the situation of Iranian hospitals based on the checklist of elderly-friendly hospitals. Their findings showed that the situation of hospitals in terms of providing services to the elderly, home care services, the interaction of medical staff with the elderly, and preventive measures are weak and the elderly health has been neglected.

Despite numerous studies conducted in developed countries to design a framework for elderly-friendly hospitals, few studies have been observed in developing countries, including Iran. The world's population pyramid indicates a trend toward aging, and the speed of population aging is much faster in Iran. By aging, older patients are more hospitalized than younger patients. On the other hand, hospitals in Iran are in poor condition based on the principles of elderly-friendly hospitals. Thus, for creating a suitable environment and provide quality medical services for the elderly, the present study in Iran seems necessary. Accordingly, the present study was conducted to design a comprehensive model of elderly-friendly hospitals in Iran.

METHODOLOGY

This exploratory study was performed from February to April 2019. The research population consists of Iranian physicians, nurses, and paramedics. The number of samples for factor analysis is estimated in proportion to the number of items of the tool and 5-10 people per item [20]; therefore, in the present study, the number of samples with a probability of attrition was calculated to be 420 cases.

Due to the high number of samples as well as the structural and cultural differences of the provinces, hospitals were randomly selected from 6 provinces in different geographical areas of Iran by cluster sampling method; two provinces from the center (Tehran and Isfahan) and one province from the north (Gilan), south (Khuzestan), west (Kermanshah) and east (Khorasan Razavi), and then samples were selected by available sampling from each hospital.

Inclusion criteria were having at least 1 year of work experience, having at least a bachelor's degree, and according to self-report, having a history of care for the elderly or a scientific, executive, managerial experience regarding the elderly and having a desire to participate in research. Incomplete questionnaires were excluded from the study. Eighteen people who were unwillingness to participate in the research or cases with uncompleted questionnaires were excluded from the study (participation rate = 97%). Sampling was performed following providing an explanation about the research objectives and after receiving the informed written consent of the staff. The participants were assured of the confidentiality of the information as well as their privacy.

Template design and testing

For designing the model, first, a review of the studies performed, available texts, models, and tools in the field of elderly-friendly hospitals was performed. Then, the initial model of the elderly-friendly hospital was designed and approved by experts in elderly studies and health services management). According to the initial model, the initial 57-item tool was developed, and then evaluated (psychometric test). For the psychometric test, validation (face validity,

content validity, and construct validity) and reliability (internal correlation and stability) were used. The questionnaire was scored on the 5-point Likert scale: strongly agree, somehow agree, have no opinion, somehow disagree, and strongly disagree.

Face validity

Qualitative (10 staff and 10 specialists) and quantitative (10 specialists) methods were used to determine face validity. The face to face interviews was done and the difficulty, relevancy, and ambiguity levels were reviewed and corrected. To quantify the face validity, the quantitative method was employed. An acceptable impact score of equal to or greater than 1.5 was regarded for each expression [21].

Content validity

To determine the quality of content validity, 15 experts were consulted regarding the content, correct grammar, use of appropriate phrases, and appropriate order of items. Also, the validity of the content was determined quantitatively based on the opinions of 15 experts using content validity ratio (CVR) and content validity index (CVI). CVR coefficient of more than 0.49 based on the Lawshe table [22], CVI more than 0.8 based on Waltz & Bausell validity index, and total scale-content validity index (S-CVI) of 0.9 or more were considered as acceptable criteria [23].

Initial reliability

Initial reliability (internal consistency of the tool) was performed through a pilot study using a sample of 30 personnel.

Construct validity

To calculate construct validity, exploratory and confirmatory factor analyses were employed. The Kaiser-Meyer-Olkin (KMO) test as a measure of sampling adequacy was performed with a minimum acceptable value of 0.60 [24]. The Bartlett's test for Sphericity was also used. Exploratory factor analysis (EFA) was performed with principal component analysis as well as varimax rotation. Then, based on the scree plot of eigenvalues and according to the opinion of the research team, we calculated the number of factors. The factor loading of each question in the rotated factor matrix was considered at least 0.4 [25].

Accepted estimates, including path coefficient and fit indices, were employed to confirm the confirmatory factor. Chi-square/df of below 3, the goodness of fit (GFI) of over 0.8, root mean square error of approximation (RMSEA) of 0.09 and less, and indices, including normed fit index (NFI), inclusive fitness initiative (IFI), and comparative fit index (CFI) of higher than 0.9 were regarded as appropriate criteria [26].

Reliability and the final pattern

For estimating reliability, internal consistency and stability (test-retest) were applied. Cronbach's alpha's cut-off point was considered 0.6 [27]. Internal consistency was performed on 408

personnel. To determine the stability, the test-retest approach, and intra-class correlation (ICC) were used. The minimum ICC value was considered to be 0.4 [28]. Test-retest of the questionnaire was performed in two stages with an interval of approximately two weeks on 30 staff and the inter-class correlation coefficient was determined for the items and the whole tool. Finally, the final model of the elderly-friendly hospital was designed and approved by experts.

Statistical analysis

SPSS 22 was applied for data analysis using descriptive (mean, standard deviation, and frequency) and inferential statistics (EFA, intra-class correlation coefficient, Cronbach's alpha, and Pearson correlation coefficient). AMOS software was employed to confirm the items and factors obtained from EFA. A P-value <0.05 was regarded as a significant level.

RESULTS

From 408 participants, 186 (45.6%) were women. The highest percentage of the samples had a master's degree or higher (58.3%). Also, 6.6% of the samples reported less than 10 years' working experience. Table 1 presents other subjects' characteristics (Table 1).

After the qualitative assessment of formal validity and content validity, the items were corrected according to the participants' opinions. In their view, the tool was comprehensive enough. After quantitative face validity, all 57 items were kept due to the impact score of greater than 1.5. The CVR and CVI values related to all items as well as the S-CVI/Ave (0.91) were within the accepted range (P <0.05). The initial reliability results of the tool confirmed its internal consistency (0.894) and the correlation of the scores obtained for each item and the whole scale (P <0.05).

The Bartlett's sphericity test findings (X2 = 4724.839, DF = 1596, p≤0.001) and KMO test (0.875) were approved. The scree plot of the eigenvalues identified a total of 7 main factors that account for 50.5666% of the total variance. Table 2 presents the factors' names and loadings .

In this study, the minimum factor loading required for each item is 0.4 that is the result of the EFA of 47 items. Based on the accepted estimates of path coefficients, the following results were obtained for effect of the dimensions: policy-making (0.68), organizational support (0.66), care process (0.63), care ethics (0.63), emotional-behavioral environment (0.60), physical environment (0.52) and care information systems (0.51), respectively. The significance value of all items of the questionnaire was higher than 2; thus, all items were confirmed. The t-value of each factor loading was above 1.96; therefore, the alignment of the questionnaire questions is valid for measuring concepts (Table 2).

The GFI in this study was 0.857, which was confirmed. Other goodness of fit indices is listed in (Table 3).

According to the final reliability, Cronbach's alpha coefficient was 0.90 and the homogeneity coefficient of the questionnaire

was 0.91 (P <0.001). Finally, the final model of the elderly-friendly hospital was approved and designed based on the opinion of experts according to (Figure 1).

DISCUSSION

The initial model was designed by a review of previous investigations, available texts, models, and tools in the field of the elderly-friendly hospital. The model was approved by the research team and also the experts. We used various scientific sources in designing the initial model.

In the present study, 7 dimensions, including ethics in care, physical environment, care process, emotional-behavioral environment, organizational support, and care service systems were explained and the policy-making dimension showed the greatest impact. In this dimension, the most effective item was the "creation of a comprehensive information system for the elderly."

The absence of a complete information system is a challenge for elderly care. However, any action and decision for these people is needed to be according to acceptable data regarding their individual and social features. Our results are in line with the research by Ahmadi et al., Goharinezhad et al., and Alizadeh Khoeii et al. [29] in terms concerning comprehensive information system.

In this study, creating the electronic health record (EHR) was one of the effective factors in the development of an elderly-friendly hospital. In this regard, Goharinezhad et al. in their study emphasized the need to create an EHR for the elderly due to forgetfulness and illiteracy, which is in line with our findings.

Organizational support was the second effective dimension in our model. The effect of organizational support on the development of elderly-friendly hospitals has been confirmed in the studies by Kim et al., Chiou and Chen, and Wong et al. In this dimension, the most influential item was "providing specific funding for elderly-friendly policies."

In their study, Karki et al. mentioned the lack of financial resources as an obstacle to the implementation of programs for the development of elderly-friendly hospitals and emphasized providing a certain financial budget for the implementation of the programs, which is in line with the results of this research.

Lack of familiarization and continuing education programs regarding geriatric medicine and care is one of the most important challenges in the Iranian hospital educational system. In the present study, "teaching the basics of geriatrics for medical and non-medical staff" was emphasized. Consistent with our findings, Samimi Sedeh et al. [30] also indicated that it is necessary to develop and improve the quality of care team training based on the needs of the elderly.

Care ethics was the third effective dimension of the present study model. Care ethics included the necessary programs and measures to address ethical issues in care for the elderly. Kim et al., Chiou, and Woo et al. [31] also introduced care ethics as an important component of an elderly-friendly hospital that is consistent with our findings. In this regard, the most influential item was "respect for patient privacy and the principles of confidentiality." Patient privacy is an important variable in determining the level of satisfaction and patients' understanding of the quality of care services. Adib-Hajbaghery and Zehtabchi [32] in their study showed that the level of privacy of most elderly patients in the hospital is moderate and weak, which indicates the weakness of the health care system in respecting the privacy of patients, especially the elderly. Accordingly, the principles of confidentiality and privacy were emphasized, which is consistent with our results.

In this research, "palliative care and end of life" was effective on elderly-friendly principles. Palliative care is one of the approaches for improving the quality of life of patients and increasing the effectiveness of care with an inter-professional nature. The elderly need palliative care and end-of-life care, and nurses need to be prepared to deal with this [33]. The findings of the present study emphasized increasing nurses' awareness of palliative care and end-of-life care, which is in line with those reported by Heidari et al. [34].

Care process was the fourth effective dimension in the present study model. It includes the development of health promotion programs and increases patient participation in the treatment process and the continuation and follow-up of treatment, which is in line with those reported by Boltz et al. [35], Wong et al., and Kim et al.. In this dimension, the most influential item was "increasing the participation of the elderly in the care process."

Patients' participation in treatment decisions leads to increased satisfaction and greater trust and reduces patients' anxiety and excitement [36, 37]. It also promotes health indicators and outcomes [38] and quantity and quality of life [39]. In their study, Rejeh et al. [40] emphasized the increasing role of the elderly in care, which is in accordance with our findings.

By aging and the development of chronic diseases, the costs of treatment and length of stay of the elderly in hospitals are increased. In their study, Chiu and Chen, and Kim et al. mentioned "reducing the length of hospital stay of elderly patients" as one of the important elderly-friendly components, which is consistent with our results.

The fifth effective factor was the emotional and behavioral environment. In this dimension, the most influential item was "strengthening verbal and non-verbal communication skills". Training and strengthening how to communicate properly verbally with the elderly to staff and physicians increase their patience in dealing with the elderly [41] and also establishing proper communication with the elderly require more time and accuracy by staff. Ahmadi et al. and Rahimian et al. in their studies showed the poor communication between medical staff and the elderly. This finding is consistent with our results to strengthen the correct verbal and non-verbal communication skills of the staff regarding the older people.

The sixth influential factor was the physical environment. The physical environment of the hospital should be appropriate to the specific situation of the elderly. Baltz et al., Karaki et al., and Kim et al. also considered the physical environment as an effective factor in the development of an elderly-friendly hospital, which is consistent with the present study. In this dimension, the most influential item was "accessibility". In this dimension, the most common factor loading was "access to the hospital", which is one of the most important components in providing services to the elderly, because many elderly possibly cannot come to the hospital by their personal car or with companions. Easy access provides a convenient environment for the elderly who may have to visit the hospital frequently to seek treatment. Rashmi in their study conducted at Bangalore Hospital in India emphasized this component [42], which is in line with our findings.

"Guiding and directing the elderly" in the hospital was one of the important components in providing services to the elderly. Signboards in the hospital play an important role in guiding the elderly to different wards and units of the hospital. We emphasized guiding and directing the elderly through signboards, which is in line with the studies by Baltz et al. and Ahmadi et al.

The seventh effective factor in the designed model was the service systems. Existence of a separate outpatient department, a separate queue, a prioritization system for the elderly, and adaptation of the actions of healthcare service centers with services considering the special needs of the elderly was an important necessity in elderly-friendly hospitals, which has been emphasized by the World Health Organization [43].

Ahmadi et al. and Goharinezhad et al. stated in their studies that the elderly are admitted to the hospital similar to the other age groups, there is no prioritization system for them, and there is no special treatment department for the elderly. The results of these studies are consistent with the results of the present study regarding establishing clinics and treatment units for the elderly in the hospital.

The limited number of experts in elderly care, as one of the important components of elderly care, are available in Iran that does not meet the needs of the elderly. In this respect, our findings are in line with that of Alizadeh et al. on the education and training of experts in elderly care [44].

The results of confirmatory validity in the present research indicated that the final model of elderly-friendly hospitals in 7 dimensions is appropriate and approved. The results of the fit index in the present study were acceptable. In a suitable model, RMR value is closer to zero, GFI and AGFI values are closer to one, RMSEA value is < 0.1 and CFI is > 0.9 [45]. The findings of the model fit index of the present study are in line with the above criteria.

CONCLUSION

The present study introduced a suitable and approved Iranian model regarding the elderly-friendly hospital with 7 dimensions. The presented model can be used and helpful as a guide to promoting hospitals in the dimensions of policy-making, organizational support, ethics in care, emotional-behavioral environment, physical environment, care process, and service systems. Therefore, the use of the introduced model in the cultural context of Iran, especially in hospitals, is recommended.

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CONFLICT OF INTERETS

None to declare.

REFERENCES

1. Kim Y, Han S, Hwang J. Development of the Korean framework for senior – friendly hospitals: a Delphi study. BMC Health Services Research. 2017; 17: 528-238.

2. Davidson PM, DiGiacomo M, McGrath SJ. The feminization of aging: how will this impact on health outcomes and services? Health Care Women Int 2011; 32: 1031-1045.

3. Beard JR, Officer A, de Carvalho IA, Sadana R, Pot AM, Michel J-P, et al. The world report on ageing and health: a policy framework for healthy ageing. Lancet 2016; 387:2145-54.

4. Wallace P. Agequake. Finland: British Library Cataloguing in Publication Data;1992.

5. United Nations. Department of Economic and Social Affairs Population Division. World Population Ageing .2013. New York: United Nations.

6. Lioyd-Sherlock P. Population again in developed and developing regions: implications for health Policy. Soc Sci Med. 2000; 51:887-95.

7. Statistical Center of Iran. Selected results of the 2015 national population and housing census. 2016Tehran: Statistical Center of Iran.

8. Goharinezhad S, Maleki MR, Baradaran HR, Ravaghi H. Futures of Elderly Care in Iran: A Protocol with Senario Approach. Med Journal Islam Republic 2016; 30:416.

9. Goharinezhad S, Maleki MR, Baradaran HR, Ravaghi H. A Qualitative Study of the Current Situation of Elderly Care in Iran: What Can We Do For The Future? Global Health Action 2016; 9:32-56

10. Gutman GM, Love T. Towards More Elder Friendly Hospitals: Final Report-Studies 3b and 3c. Gerontology Research Centre, Simon Fraser University, 2008.

11. Karki S, Bhatta DN, and Aryal UR. Older people's perspectives on an elderly-friendly hospital environment: an exploratory study. Risk Management Health care Policy. 2015; 8: 81–89.

12. Ahmadi-Teymourlouy A, Seyedin H, Fadaye-vatan R. Toward Age Friendly Hospitals in Developing Countries: A Case Study in Iran.

Health Promotion Perspectives, Vol. 5, No. 1, 2015; P: 42-51.

13. Alhamdan, A. A., Alshammari, S. A., Al-Amoud, M. M., Hameed, T. A., Al-Muammar, M. N., Bindawas, S. M., et al. Evaluation of Health Care Services Provided for Older Adults in Primary Health Care Centers and Its Internal Environment: A Step Towards Age-Friendly Health Centers. Saudi Medical Journal, 2015; 36(9): 1091-96.

14. Frank CC, Feldman S, Wyman R. Caring for Older Patients in Primary Care: Wisdom and Innovation from Canadian Family Physicians. Canadian Family Physician. 2018; 64(6):416-18.

15. Ahmadi-Teymourlouy A, Seyedin H, Fadaye-vatan R,Omrani A. Assessing the Suitability of the Design, safety and Physical Environment of Hospitals for the Elderly: A Case in Iran. Iranian Journal of Health, Safety & Environment, 2019; 6(1): 12313-1220.

16. Augustine V. Senior Friendly Hospital Strategy: Needs and Challenges. A Study in a Selected Hospital [BSc Dissertation], India: Karnataka, Bangalor, Rajiv Gandi University of Health Sciences; 2010.

17. Park B, Brand P. An Elder-Friendly Hospital: Translating a Dream into Reality. Nurs Leadrsh 2004; 17:62-76.

18. Chiou S-T, Chen L-K. Towards age-friendly hospitals and health services. Archives of gerontology and geriatrics. 2009; 49:S3-S6.

19. Wong KS, Ryan DP, Liu BA.A System-Wide analysis using a Senior – Friendly Hospital Framework Identifies Current Practices and Opportunities for Improvement in the care of Hospitalized older Adults. Journal of the American Geriatrics Society. 2014.

20. Beavers, Amy S., Lounsbury, John W., Richards, Jennifer K., Huck, Schuyler W., Skolits, Gary J. & Esquivel, Shelley L. Practical Considerations for Using Exploratory Factor Analysis in Educational Research. Practical Assessment, Research & Evaluation. 2013; 18(6): 1-13.

21. Shahbazzadeh Sh. Development and Psychometric Evaluation of the Instrument for Hookah Smoking Initiation among Women: A Sequential Exploratory Mixed Methods Design. PhD thesis. Tehran University of Medical Science. 2014.

22. Plitcha SB, Kelvin EA. Munro's Statistical Methods for Health Care Research. 6 ed. Philadelphia: Lippincot Williams and Wilkins; 2013.

23. Heravi karimovi M, Anooshe M, Foroughan M, Sheikhi MT, Hajji zadeh I. Designing and Psychometric of Elder Abuse in the Family questionnaire. Salman, Iraninan Journal of ageing. 2010; 5(15): 7-21.

24. Jafari H, Saidi N, Kabi A, Noshadi E, Hallaphi HR. Using exploratory factor analysis in evaluating the competitiveness of port services. Journal of Marine Science and Technology.2015; 14(2): 91-100.

25. Heidarali H. The provide and standardize the measures of job satisfaction Publications State Management Training Center. Tehran. 2002.

26. Kline, R.B. Principles and practice of structural equation modeling, 3nd Ed. New York: Guilford. 2011.

27. Floden A, Lennerling A Fridh I, Rizell M, Forsberg A Development and psychometric evaluation of the instrument: attitudes towards organ donor advocacy scale (ATODAS). The Open Nurs 1. 2012, 6: 97-99.

28. Baumgatner T.A, Chung H. Confidence limits for intra class reliability coefficient, Journal of Measurement in Physical Education and Exercise Science. 2001; 5(3):179-188.

29. Alizadeh Khoeii M, Fakhrzadeh H, Sharifi F, Mohamadiazar M, Nazari N. Analytical Performance of Administrations in Charge of Ageing Program in Iran. Iranian Journal of Diabetes and Metabolism. 2013; 13(1): 74-81. . (In Persian).

30. Samimi Sedeh Gh, Mahfoozpour S, Hesam S, tabibi SJ. The Necessity of Aligning the Human Resources Strategies of Health System with the Mega-Trends of the Older People Health Domain. Depiction of the Health. 2018; 9(3): 172-185.(In Persian)

31. Woo j, Mak B, Yeung F. Age – Friendly Primary Health Care: An Assessment of Current Service Provision for Older Adults in Hong Kong. Health Serve Insights 2013; 6: 69-77.

32. Adib-Hajbaghery M, Zehtabchi S. Evaluation of Elderly Patient's Privacy and their Satisfaction Level of Privacy in Selected Hospitals in Esfahan. 2014; 8(29) 97-120. . (In Persian).

33. Badrakalimuthu V, Barclay S. Do people with dementia die at their preferred location of death? A systematic literature review and narrative synthesis. Age Ageing. 2014;43(1):13-9.

34. Heidari M.R, Hosseinkhani S.N, norouzadeh R. Elderly's Attitude toward End-of-Life Concerns. Journal of Nursing Education. 2018; volume 7(2):35-43.(In Persian)

35. Boltz M, Capezuti E, Shabbat N. Building a framework for a geriatric acute care model. Leadership in Health Services 2010; 23(4):334-360.

36. Rahimi M, Izadi N, Rezvan madani F, Eghbalian A. [Knowledge and Practice Level of Self-Directed Care Among Diabetics in Kermanshah City in 2014; A Short Report]. Journal Rafsanjan University Med Science. 2015; 14(2):167-72. . (In Persian).

37. Rafii F, Soleimani M, Seyed-Fatemi N. Concept Analysis of Participation of Patient with chronic Disease: Use of Hybrid Model. Iran journal of Nursing. 2010; 23(67):35-48. . (In Persian).

38. Vaskouei Eshkevarei K, Hajinabi K, Riahi L, Maleki M. Patient Sheared Decision-Making Models: A Comparative Study. Iranian Journal of Nursing Research. 2019; 13(6): 83-93. (In Persian).

39. 39-Parvaresh S,Shamsalinia A,Jahanshahi M,Hajiahmadi M. Impact of Family –Based Empowering Model on the Received Threat and Self-Efficacy of Families of Diabetic Elderly at Risk of Falling.Jornal of Clinical Nursing and Midwifery.2018; 7(2):96-107. (In Persian).

40. Rejeh N, Heravi-Karimooi M, Foroughan M. The Needs of Hospitalized Elderly Patients. Iranian Journal of Ageing. 2010; 5(1): 42-52. . (In Persian).

41. Wolf E, Harrington KM, Clark SL, Miller MW. Sample Size Requirements for Structural Equation Models: An Evaluation of Power, Bias and Solution Propriety. 2013. Educational and Psychological Measurement; 76(6): 913-934.

42. Rashmi M, Senior Friendly Hospitals in Banblore City-Development and Application of Criteria [MD Thesis]. India: Karnataka, Banglore, Rajiv Gandi university of health sciences: 2010.

43. World Health Organization. Active Aging: Towards Age-Friendly Primary Health Care. Who, 2004.

44. Alizadeh F, Tabibi SJ, Maleki MR, Nasirpour AA, et al. Geriatric Specialists Prediction Based on Dynamic System Approach for the Iranian Elderly. Journal of Hospital. 2016; 15(3):125-135.(In Persian).

45. Hamidizadeh M, Baramond S. Rotation of trading partners as a tool to decrease the negative consequences of economic sanctions. ORMR. 2012; 1(4): 1-191.

Table 1: Demographic characteristics of the participants in the study

Variable	Group	Number (%)
Gender	Female	186 (45.6)
	Male	222 (54.4)
Age (year)	30-40	107 (26.22)
	41-50	236 (57.84)
	>50	65 (16)
Education	bachelor's degree	170 (41.7)
	Master's degree	94 (23)
	Ph.D	27 (6.6)
	Specialist	59 (14.2)
	General practitioner	58 (14.2)
Work experience (year)	1-10	27 (6.6)
	11-20	213 (52.2)
	21-30	168 (41.2)

Table 2: Factor loading, standardized coefficients, and the significance level of the items to expand the facilities of the elderly-friendly hospital

Factor	Code	Items and relevant dimensions	Load factor	Standard coefficient	Significance level
Ethics in care	57	Respect for the patient's privacy and the principles of confidentiality and legal protection of others	0.717	0.71	-
	50	Designing a system for identifying the elderly at risk of abuse	0.703	0.58	10.76
	51	Increasing the elderly's ability to share their personal interests with personnel	0.674	0.65	12.056
	52	Receiving care by a nurse or physician of the same gender	0.660	0.61	11.32
	56	Familiarity with the ward environment on admission	0.654	0.65	11.99
	53	Emphasis on providing cost-effective services in the care process	0.653	0.63	11.60
	55	Increasing nurses' awareness of palliative and end-of-life care	0.648	0.70	12.84
	54	Providing counseling systems for staff, patients, and their companions	0.634	0.65	12.052
Physical environment	6	Elderly access to assistive devices such as mobility aids and hearing aids	0.672	0.48	-
	7	Easy access to the hospital for the elderly	0.656	0.63	8.06
	2	Availability of alarm horn above the bed, toilet, and bathroom	0.645	0.53	7.42
	9	Convenience and the safety of the elderly bed	0.615	0.54	7.49
	8	Development of infection control programs for the physical environment of the hospital	0.605	0.57	7.69
	3	Designing the green space and interior space of the hospital in accordance with the elderly: in terms of light, color, floor	0.605	0.57	7.68
	1	Improvement and adaptation of the physical environment for more independence of the elderly: installation of handles on both sides of the corridors and toilets and baths, the presence of ramps and railings next to the stairs	0.557	0.58	7.74
	5	Guiding and directing the elderly in the hospital	0.517	0.61	7.95
	4	Wide and spacious elevators and corridors and room doors	0.512	0.51	7.21
Care process	40	Increasing the awareness and participation of the elderly in the care process	0.765	0.75	-
	41	Development of a protocol for screening high-risk diseases	0.744	0.68	13.17
	39	Developing a written plan for the hospital to cooperate with other organizations providing medical and social services to continue treatment	0.738	0.73	14.17
	42	Providing care programs with multidisciplinary and interdisciplinary evaluations and performing interventions and evaluation of the elderly	0.722	0.72	14.06
	43	Developing a common and agreed method for the exchange of patient information between organizations and the hospital	0.718	0.7	13.57
	44	Reducing the length of hospitalization of elderly patients	0.685	0.74	14.46

Behavioral emotional environment	16	Strengthening verbal and non-verbal communication skills	0.746	0.76	-
	18	Having a good relationship and treat the elderly with respect	0.737	0.70	13.45
	17	Existence of a systematic grievance process	0.735	0.71	13.79
	14	Providing information about hospital services, appointment times, and medical expenses	0.728	0.70	13.59
	13	Patience in caring for the elderly patient	0.721	0.71	13.73
	15	Preparation of pamphlets and educational booklets with pictures, for the awareness of patients and elderly companions (teaching self-care programs)	0.633	0/63	12.1
Organizational support	46	Providing specific funding for the provision of equipment and services for elderly-friendly policies	0.721	0.73	-
	45	Providing the necessary training to physicians and nurses regarding the basics of geriatric medicine	0.718	0.70	10.8
	44	Increasing the participation of all stakeholders (welfare organization, relief committee, charities, and non-governmental organizations, and the private sector, ...) in the policy-making for the elderly	0.712	0.66	10.52
	47	Providing facilities to encourage staff and motivate creativity in innovation and technology policy and cooperation in the implementation of elderly-friendly standards	0.675	0.68	10.14
	48	Providing special insurance for the elderly and making it compulsory for all members of society from a certain age and covering all outpatient health care services, home treatment, tertiary services, and ancillary equipment	0.637	0.63	10.37
	49	Evaluation of the processes and programs of elderly-friendly hospital programs by managers and staff	0.62	0.59	9.82
Care service systems	22	Providing a system for prioritization of the elderly	0.687	0.62	-
	24	Establishment of clinics and treatment units for the elderly in the hospital	0.679	0.53	6.5
	25	Making the elderly informed about the drugs prescribed in the hospital pharmacy	0.642	0.54	6.5
	23	Establishing a home care system for the elderly and referring to their home if needed	0.622	0.57	6.65
	19	Availability of a geriatrician in the hospital	0.614	0.60	7.1
	26	Create special benefits for the elderly regarding the cost of hospital services	0.564	0.57	7.14
Policy-making	29	Considering the standards of the elderly-friendly hospital as the accreditation standards of hospitals	0.705	0.53	-
	31	Improving national and provincial levels of policy-making structure in the health of the elderly	0.65	0.57	7.93
	30	Creating electronic files for the elderly	0.617	0.60	8.15
	34	Mentioning the concept of the elderly-friendly hospital in the mission and goals of the hospital	0.58	0.54	7.56
	33	Establishment of cultural and research committees for the elderly in the hospital	0.497	0.57	7.92
	32	Creating a comprehensive health information management system for the elderly in Iran	0.46	0.62	8.31

Table 3: Goodness of fit indices of the factors affecting the expansion of facilities for the elderly-friendly hospital

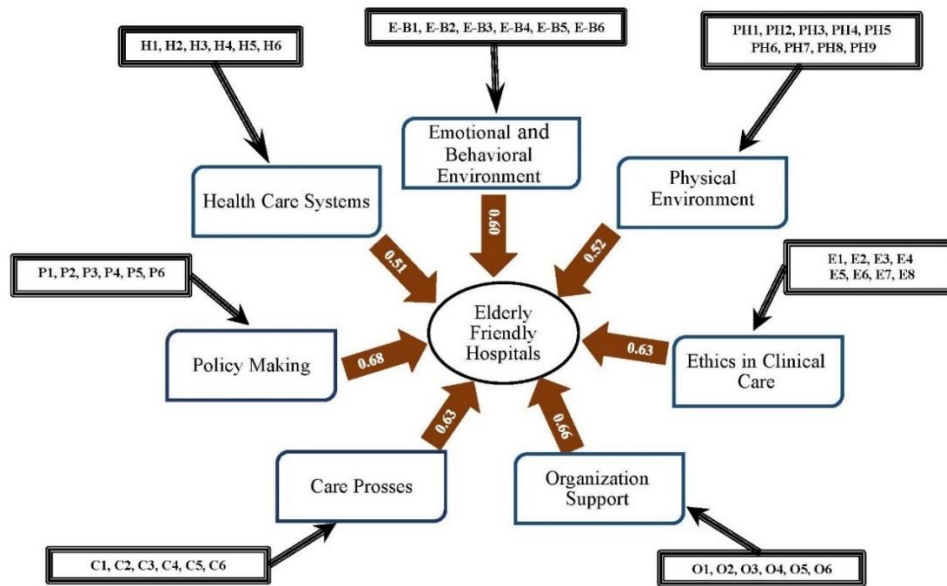| Index	Final model	Limit
x 2/Degrees of Freedom	1.54	< 3
Goodness of fit (GFI)	0.857	> = 0.8
Adjusted goodness of fit index (AGFI)	0.843	> = 0.8
Root Mean Square Error of Approximation (RMSEA)	0.037	< 0.10
Comparative Fit Index (CFI)	0.908	> = 0.9
Normed Fit Index (NFI)	0.938	> = 0.9
Inclusive Fitness Initiative (IFI)	0.909	> = 0.9

Fig.1: The final model of the elderly-friendly hospital in research