Designing Community Based Rehabilitation Model Using Structural Equation Modeling (Iran)

Nasiripour Amir Ashkan[1], Afkar Abolhasan[1*], Tabibi Jamalodin[1], Najafi Leila[2], Kmali Mohammad[3] and Farmanbar Rabiollah[4]

[1]Department of Health Services Management, Science and Research Branch, Islamic Azad University, Tehran, IRAN
[2]Shahid Beheshti University of Medical Sciences, Tehran, IRAN
[3]College of Rehabilitation Sciences, Tehran University Medical Sciences, Tehran, IRAN
[4]College of Nursing and Midwifery, Gilan University Medical Sciences, Rasht, IRAN

Abstract

CBR as a strategy within community development for rehabilitation, equalization of opportunities, and social inclusion of all people with disabilities. The purpose of the study was Designing Community Based Rehabilitation Model using SEM. This study is a comparative-descriptive research that has been performed by factor analysis method. In the qualitative stage the process owners were 45 experts and in factor analysis stage, there were 564 CBR experts of Iran, CBR departments and rehabilitation deputies of 31 provinces and the CBR specialists and rehabilitation deputies of the CBR executing counties. The data collection tool was researcher-made questionnaire the content validity of which was determined through expert panel and its construct validity was determined through exploratory factor analysis by principal component analysis method with varimax rotation using SPSS16 software. Its reliability was also confirmed by test-retest and internal consistency method using Cronbach's Alpha (96%) and the most important community-based rehabilitation factors were identified through path analysis and structural equation modeling using LISREL software 8.8. In exploratory component analysis, 7 main components were identified; using semi-professional people with 9 variables, 43.1% variance, and 23.28 eigenvalue as the most important factor and social integration of the disabled people with 2 variables and 2.19% variance as the less important factor clarified the community-based rehabilitation changes; however, in the fitted model which is the most complete saturated model, 7 factors of subsistence with ß= 0.20, using semi-professional people with ß= 0.19, medical procedures with ß= 0.19, socio-political supports with ß= 0.18, social integration of the disabled people with ß=0.18, educational measures with ß= 0.16, and health practices with ß= 0.14 had the highest predictive power in the order of importance. Considering the cultural, economic, political, and social context of Iran, usage of the obtained factors can promote the dignity of the disabled people and their family in the society as well as empowering and equalization of their opportunities.

Introduction

Disability is an unexpected and unpleasant phenomenon that some human subjects have to endure it in a part or sometimes their whole lives[1]. World Health Organization estimates 7-10% of the general population is disabled in the world , most of them in developing countries where basic services are limited and they have no access to institutional rehabilitation services[2]. Community based rehabilitation (CBR) is a concept which first appeared thirty years ago. The definition developed by the International Labor Organization, the United Nations Educational, Scientific and Cultural Organization and the World Health Organization describes CBR as "a strategy within community development for rehabilitation, equalization of opportunities, and social inclusion of all people with disabilities[3]. This is indeed a strategy that can see to the needs of disable people of the community in all countries and this plan will be implemented in more than 100 countries as recommended by World Health Organization[4]. CBR as it developed in the late seventies and early eighties was largely a response to the physical rehabilitation needs of many disabled people who by that time were not reached through so-called institution based rehabilitation. CBR became an approach to make rehabilitation accessible to disabled people at the community level[5]. CBR in those days developed from within a medical model perspective, implemented in the context of the health sector, and was concerned with coverage. CBR in those early years focused mostly on the notion of "Rehabilitation for All", much in line with the WHO strategy of Health for All[6]. Since rehabilitation specialists can only attend to 10% of the treatments that is needed by the disabled people and 20% can be solved by other specialists and the remaining 70% by their families and communities, thus the community-based rehabilitation can respond to these needs more than center-based rehabilitation due to utilization of the disabled people, their families and communities as the available human resource[7].

Despite the studies conducted inside and outside of Iran including Tavee research in Thailand that requires participation of disabled for CBR survival[8]. Sharma in northern Vietnam that considers training programs vital for CBR and believes that implementation of educational programs increases the abilities of handicaps[9]. Murthy and Gopalan model, Peat and Boyce model[10], and Wang et al.[11], identification of factor for community-based rehabilitation is rather difficult; because the CBR patterns are as different as the variety of the communities. The studies performed in other countries also cannot be applied to Iran due to the difference in cultural, social and economic conditions. Therefore, the present study aims to design a community-based rehabilitation model according to Iranian society using structural equation modeling so that its implementation leads to empowerment of the handicaps and promotion of theirs and the society's health level.

Material and Methods

This study is a comparative – descriptive research that has been performed by factor analysis method. In the qualitative stage, for identification of the factors affecting the community-based rehabilitation, 45 experts were organized in 3 groups consist of 15 experts having master degree or higher, 15 experts from Welfare Organization and Health ministry and 15 ones of officials or staff of NGOs or private or public charitable organizations which have an approach in helping the disabled. The data collection tool in the qualitative stage and library studies was note cards and in field stage of the study it was interviews and questionnaires which by surveying the experts and using Likert scale was graded as completely agreed (5), agreed (4), no comments (3), disagreed (2) and completely disagreed (1) for each factor and the factors that at least 70% of the experts agreed on were saved as factor affecting the community-based rehabilitation and the remaining factors and the new ones suggested by the experts were subjected to survey again to reach a consensus on them. After identification of the factors and studying different resources, a researcher-made questionnaire was designed in 2 sections including 9 questions about demographic information and 54 questions about variables affecting the community-based rehabilitation. The study environment was consisted of the State Welfare Organization of Iran, the Welfare Division of 31 provinces and 314 counties enforcing CBR. The validity of the questionnaire was determined by content validity method and expert panel and for trustworthiness or reliability of the questionnaire Cronbach's Alpha coefficient method was used to assess internal consistency, the coefficient value of which was achieved as 96%. To determine construct validity, the questionnaire was sent in poll method to 620 CBR experts of the State Welfare Organization of Iran, rehabilitation deputies of provinces, CBR department of provinces, CBR specialists of counties and rehabilitation deputies of counties enforcing CBR in a cross-sectional study; 56 questionnaire were removed due to unwillingness of the participants and incompleteness and finally determination of the construct validity was performed using the data from 564 people for exploratory factor analysis by principal component analysis method with varimax rotation using SPSS16 software. Exploratory factor analysis was performed considering the eigenvalue and the value of the two measuring indicators of Kaiser-Meyer-Olkin (KMO) which was 0.96 and significance of Bartlett's Test of Sphericity with P = 0.01 and the most important factors affecting the community-based rehabilitation were identified through path analysis and structural equation modeling using LISREL software 8.8.

Results and Discussion

This includes the results of the qualitative study and the exploratory and confirmatory factor analysis:

The Results of qualitative study: After reviewing the domestic and foreign literature and researches, 5 factors of medical procedures, educational services, subsistence, using volunteers, and using semi-professional people were designed as the initial conceptual model for community-based rehabilitation; after a voting survey, medical procedures with 98%, educational services with 100%, subsistence with 94.6%, using semi-professional people with 81.4%, and using volunteers with 88.3% agreement were selected as factors affecting the community-based rehabilitation and then other factors suggested by experts were again subjected to survey in which factors of using rehabilitators with 84%, health houses with 78.9%, social and political supports with 98% and health with 80.8% were also confirmed by experts; at the end of this stage, a model with 9 factors was designed as the logical model of community-based rehabilitation (figure 1).

The results of exploratory factor analysis: This stage is used for identification of the most important and the most effective factors affecting the community-based rehabilitation and determination of the loading level of each variable on the principal factors. In this study, 7 factors were selected with eigenvalues higher than 1. These factors include using semi-professional people, socio-political supports, educational services, subsistence, health interventions, medical procedures, and social integration justifies in total, 61.84% of the variance of the scores (table 1).

Table-1
Factors obtained from exploratory factor analysis

Principal Factors	Variables	Variance	Eigenvalues
semi-professional people	9	%43/1	23/28
socio-political supports	14	%4/5	2/43
educational services	11	%4/18	2/26
subsistence	8	%3/06	1/66
health interventions	7	%2/51	1/36
medical procedures	3	%2/23	1/24
social integration	2	%2/19	1/18
Total	54	100	33/40

The results of confirmatory factor analysis: For confirmation and fitting of the factors obtained from exploratory factor analysis and the variables loaded under each factor, the data obtained from LISREL software 8.8 was used; in this stage from 54 variables of exploratory analysis, 12 variables were removed and 42 variables of the fitted model clarified the community-based rehabilitation as variables which are loaded under the principal factors (figure 2). For fitting of which the following indicators have been used:

Fit-index: i. Standardizid Root Mean Residual (SMR) = 0/031, ii. Root Mean Square Error of Approximation (RMSEA) = 0/06, iii. Goodness Fit Index (GFI) = 0/95, iv. Adjusted Goodness Fit Index (AGFI) = 0/91 v. 5-ComparativeFit Index (CFI) = 0/98, vi. Incremental Fit Index (IFI) = 0/98, vii. Relative Fit Index (RFI) = 0/97, viii. Normed Fit Index (NFI) = 0/98, ix. Non-Normed Fit Index (NNFI) = 0/97.

In the fitted model which is the most complete saturated model, 7 factors of subsistence with ß= 0.20, using semi-professional people with ß= 0.19, medical procedures with ß= 0.19, socio-political supports with ß= 0.18, social integration of the disabled with ß=0.18, educational measures with ß= 0.16, and health interventions with ß= 0.14 had the highest predictive power in the order of importance (figure 3).

Discussion: The results of factor analysis led to identification of 7 determinant factors of the community-based rehabilitation in the health system of Iran among which the subsistence factor with standard ß= 0.20 had the highest predictive power and importance in the community-based rehabilitation. In the present study, granting financial facilities for disability employment, master-disciple employment, and wage employment are loaded as sub-factors of subsistence factor. Comparing it with Murthy and Gopalan model[12] and the WHO model shows that the role of employment and subsistence factors in all three models for improvement of CBR program is confirmed. The difference is that in the Murthy and Gopalan model instead of subsistence the expression "economic services" has been used but the mentioned variables in all three models are consistent. The Suraba CBR program for the Indian disabled people which works for people with visual impairment and has extended its services to all the needs of different groups of disabilities in the rural areas around Bangalore, has succeeded largely in meeting the needs of physically and mentally disabled by increasing investment in local community and enhancing the usage of the available resources of the society[12] which is compatible with the present study that considers the usage of financial local resources and disability employment effective in the community-based rehabilitation. The second factor affecting the community-based rehabilitation in the present structural model was using semi-professional people with ß= 0.19. In this study it is shown that by training PHC and CBR staff in villages and creating a communication network among CBR staff, health and care centers and hospitals, these people can be well used for promoting the community-based rehabilitation programs.
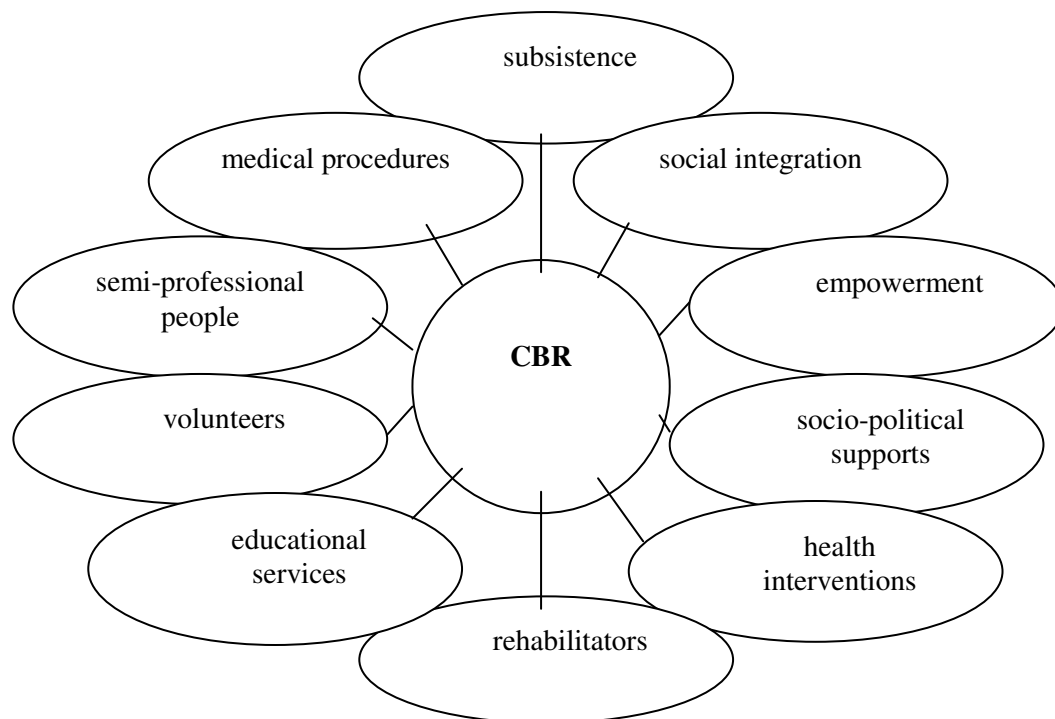

Figure-1
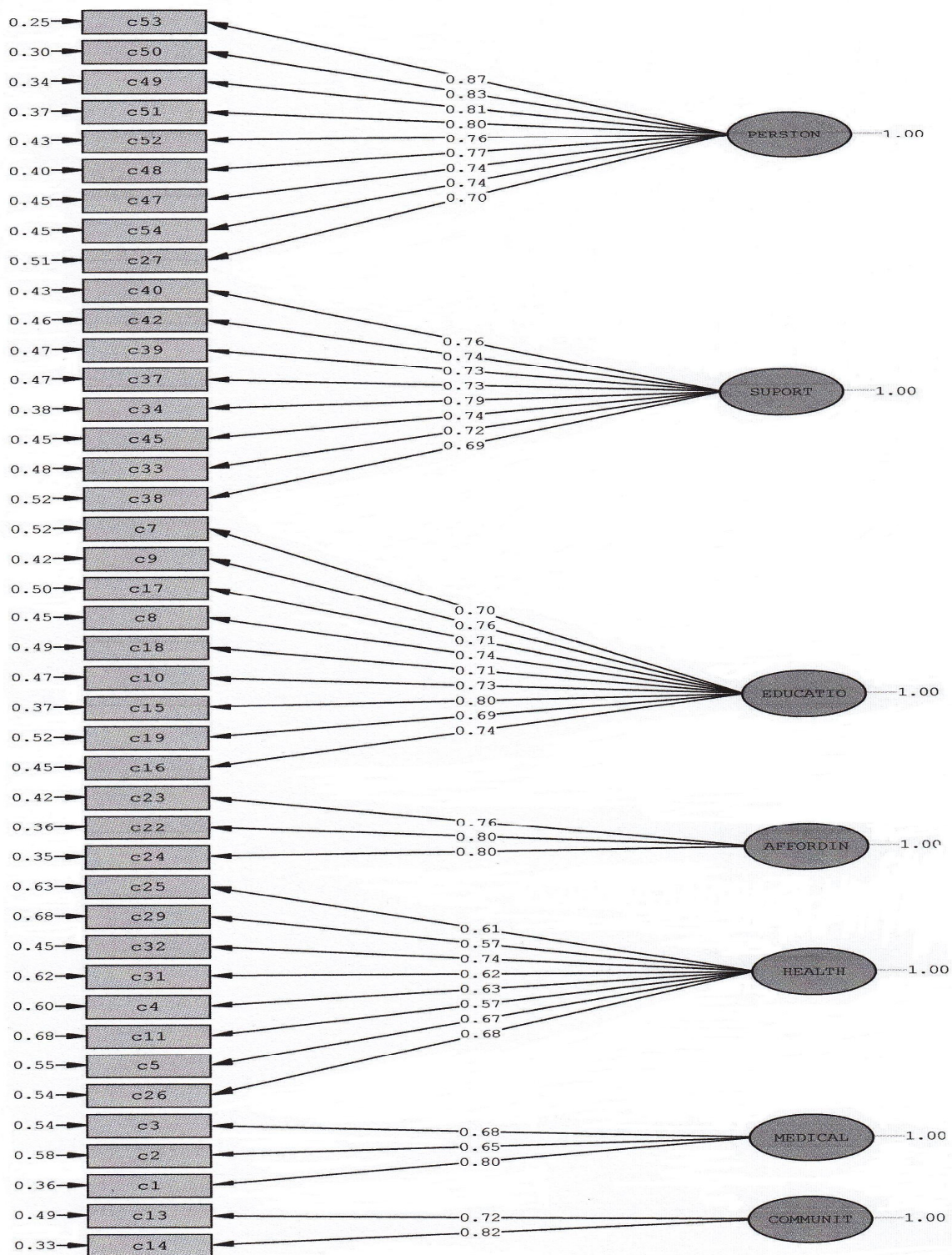**Initial conceptual model of community based rehabilitation**

Figure-2
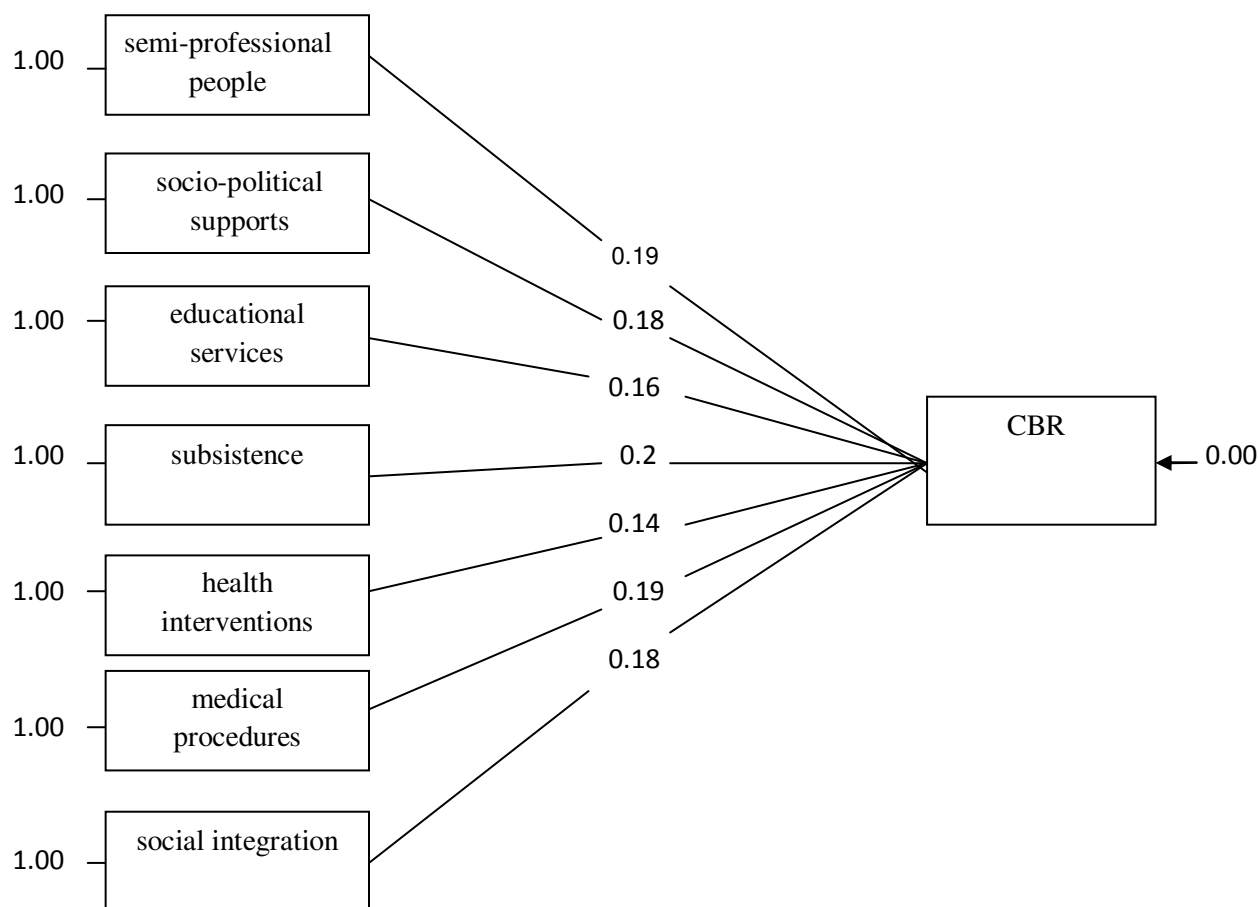**Index model in confirmatory factor analysis and loaded variable**

Figure-3
Community-based rehabilitation fit model

A study conducted by the African Medicine and Research Institute suggests the usage of semi-professional people as the success factor in CBR program and believes that training teachers and health employees in order to achieve rehabilitation knowledge and skills has great impact on support and positive attitude toward the program[12], which is consistent with the present study. Prikket also introduces the usage of semi-professional people (social staff) as an important factor in CBR which is compatible with this study. The medical procedures factor with standard ß= 0.19 was the third factor with a high predictive power and importance. Comparing this stage with the study's qualitative stage (logical model) showed that in the logical model, medical procedures were mentioned as Health factor as well. WHO introduces Health factor as the most important component of CBR. In Murthy and Gopalan classification medical procedures has been mentioned as the first factor. However, in our study this factor has come third which can be caused by the cultural, political and social differences in different countries. The Khasnabis study about people with leprosy also showed that CBR can facilitate their access to medical service[13]. Barbara J. Luters and Barbara J. Bowers concluded that the current social and medical models cannot appropriately cover the disability issue which is inconsistent with this study[14]. A study on brain stroke patients in China showed that with medical procedures, neuro-motor functions of these patients have improved considerably and has led to improvement in daily activities of brain stroke patients[15] which is compatible with this study. The fourth factor identified in the fitted model in the order of importance is "Socio-Political Supports" with 8 variables and the path coefficient of 0.18 that the comparison with the logical model of this same study showed that in the logical model, the socio-political supports was agreed by experts (n=45) as an effective factor on the community-based rehabilitation. One of the negative aspects and problems of CBR in our study is lack of social supports for disabled people and lack of financial and political supports from disability support organizations; a problem that can be solved by promotion and encouragement of positive and constructive social attitude, social participation and providing the financial and human resources. A study also indicated that preparing the society and families to support and help the handicaps can lead to empowerment of these people[16]. Unlike the present model, in Kizanchi model there is no sign of socio-political support as an effective factor on the community-based rehabilitation[12] and it

can be said that one of the differences of the present model and Kizanchi model is in the socio-political supports; but in the WHO model this factor has been mentioned as one of the effective factors on the community-based rehabilitation in the form of social needs along with health, education, subsistence and empowerment which is consistent with the present study. Our study showed that encouragement and gratitude from families who has had successes in rehabilitation of disabled people, legal protection of disabled people, suitable modeling of public roads and places, cooperation and participation of weighty people are counted among the factors affecting CBR. Social integration of the disabled with 2 variables is the fifth effective factor in the community-based rehabilitation. Our study indicated that social integration of the disabled people in artistic and sportive activities and the integration of disabled children in local ordinary schools with cooperation of the Education department play a vital role in CBR. Kizanchi believes that the role of multi-sectional organizations cannot be ignored and usage of disabled as an effective component in CBR is inevitable which is consistent with the present study. The Negros Occidental Rehabilitation Foundation which is a collaborative center for rehabilitation in Philippines has also emphasized on social integration of disabled people[12] which is compatible with this study that considers disabled integration effective in CBR. According to Bronowski et al. participation of patients with cerebral palsy, prevents them from repeated hospitalization[17] which is consistent with this study that emphasizes on social integration of the disabled people. The sixth factor was educational measures that explained the community-based rehabilitation changes with predictive power of ß= 0.16. Our study showed that CBR and inclusive education are strategies to create opportunities for handicaps and disabled people and their participation in routine activities along with healthy ones. Both strategies seek to develop the capacities of the disabled to transform them to productive citizens in the society. Teachers, parents, CBR employees, social workers and health and care staff can play roles in training process. According to Salamati and colleagues, domestic training of CBR project is also an effective way to improve disabled people in some selected groups. Also, considering the limited financial resources, usage of training services of CBR plan for younger groups was proved to be better and the right selection of the trainers can help improving this condition[2]. A study conducted in a camp in the University of Manila, Philippine, showed that CBR training caused a considerable change in living condition of disabled people and has led to improvement in their training skills especially in the students. The knowledge, attitude, and skills (KAPs) of 91.8% of the population of this camp have changed considerably from good to excellent as well[18]. And finally the last factor was health practices with standard ß= 0.14 which had the less importance in community-based rehabilitation. In Murthy and Gopalan model, this factor is mentioned in the form of medical factor and in WHO model it is mentioned as health factor. Some of its variables exist in the conceptual model provided by the researcher which is consistent with the model presented later on. Our study showed that

coordination of rehabilitation services system with other health and dare services and early detection and conducting screening programs such as amblyopia, hypothyroidism plan, diagnosis measures, medical treatment, and timely intervention can play a significant role in preventing disability and keeping them from aggression. A study in China showed that in health and care centers which are not equipped with medical equipment and staff, there is a defined gap between rehabilitation services provided in the area and the community-based rehabilitation services which indicates the importance of health and care practices in community-based rehabilitation in the society which is consistent with the present study[19]. In another study it is concluded that the current social and medical models cannot appropriately cover the disability issue which is inconsistent with this study[14].

Conclusion

Our analytical research showed that subsistence, using semi-professional people, socio-political supports, medical procedures, social integration of the disabled, educational measures and health practices are the most important components in community-based rehabilitation. And considering that the CBR models are as varied as the variety of the societies and each model has to be compatible with the desired society in particular so that it can meet the needs of that society and considering the cultural, economic, political and social context of Iran, usage of the obtained mode can help the managers in better programming so that implementing those programs leads to promoting the dignity of the disabled people and their family in the society as well as empowering and equalization of their opportunities.

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