

Effect of Self-Care Education Based on Team Members Teaching Design on Self-Efficacy in Multiple Sclerosis Patients: A Randomized Controlled Trial

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Research

Keywords: Education, Self-care, Team Members Teaching Design, Self-efficacy, Multiple Sclerosis

Posted Date: December 31st, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-136124/v1>

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Abstract

Background

Multiple sclerosis diseases threatens independence and self-efficacy for effective participation in family and community. Patients' low self-efficacy affects their ability to cope with problems and stress, depression their level of motivation in difficult situations. The purpose of this study was to investigate the effect of self-care education by team member teaching on self-efficacy in Multiple sclerosis patients.

Methods

In the randomized controlled trial study, 40 Multiple sclerosis patients from Jahrom MS society were selected by simple random sampling and then were divided into intervention and control groups by random allocation. In the intervention group, 6 training sessions were held twice a week for 60 minutes. Data were collected using Multiple Sclerosis Self-Efficacy Scale before, immediately and one month after intervention in both groups. Data were analyzed by SPSS version 21 and descriptive statistics, chi-square test, repeated measurements and ANOVA at significant level of 0.05.

Results

Patients in intervention and control groups were matched for demographic variables such as age, gender, marital status, education, occupation and so on. The mean score of self-efficacy in before, immediately and one month after intervention significantly different showed in intervention group ($p = 0.001$), whereas these changes were not significant in the control group (0.228). Self-efficacy scores were also significantly different between control and intervention groups at immediately and one month after intervention ($p = 0.001$).

Conclusion

Based on the findings, the team training approach provides a simple and safe learning for patients and leads to the improvement of self-efficacy in Multiple sclerosis patients.

Background

Multiple Sclerosis (MS) is an autoimmune inflammatory disease and central nervous system demyelination caused by a combination of genetic and environmental factors. This disease affecting more than 2 million people worldwide and is the second leading cause of disability in young adults after trauma (1, 2). The overall prevalence of MS in Europe is between 60-200 people per 100,000 populations (3) and approximately 500,000 people in the United States have MS so that 8,000 new cases are diagnosed each year; It occurs at age 20 – 40 years and is the third leading cause of disability in the United States (2). The overall prevalence of MS in the Middle East is 51.52 per 100,000. At present, Iran is known as area with high prevalence of MS in worldwide (4). The prevalence of MS in Iran are reported to be 5.3 to 89 per 100,000 and 7 to 148.1 per 100,000, respectively. According to Azimi study et al (2019),

the prevalence of MS in Iranian men and women was estimated to be 16.5 and 44.8 per 100,000, respectively (4). Complications in MS are high, although MS patients have an almost normal life expectancy, but since the majority of patients are young adults of working age, changes due disease and the nature of the disability effects on all economic, social, and emotional aspects of the individual, the family and society and poses a heavy burden on the individual and family members, as well as on the self-efficacy of these patients (5). Zachary et al.'s (1997) study showed that MS patients had a significantly higher level of depression and inadequacy and showed lower self-efficacy levels than patients with spinal cord injury (6). Self-efficacy is the belief in one's ability to organize and execute a set of activities necessary to achieve a specific outcome (7, 8). Promoting self-efficacy increases life expectancy and changes in health behaviors and is associated with symptom control, treatment of physical complications, and psychological problems of chronic patients. Therefore, self-efficacy has been recognized as an important concept in chronic disease management (8, 9). MS patients experience lower levels of self-efficacy than others and even some other neurological diseases due to physical limitations and mental stress caused by the disease.

So far, there is no known cure for MS disease. Pharmacological treatment and control of the disease course alone are not sufficient in these patients and patients experience some neurological disorders despite appropriate treatment to improve the disease (2, 10), thus implementing interventions that can be implemented by the Self-management program in these patients and promoting knowledge of health behavior in patients will help to promote self-efficacy in these patients. One of the interventions that enables patients to achieve self-management by the health system is educational interventions. Educational interventions can improve awareness and self-efficacy for pain management among patients with MS (11). Self-care education is one of the educational methods used by nurses to promote patient's health behavior. According to Orem's theory of self-care ability, it is the continuous effort that people make to continue their lives and create health and well-being (12). Self-care increases one's adaptability to the disease, enhances self-care in individuals, and reduces the degree of disability of patients and medical costs (12). Hemmati Maslakpak and Raiesi¹ (2014) stated in their study that implementing a self-management training program along with regular follow-up has increased the perception of self-efficacy in MS patients (13). Therefore, it is important to employ new methods in self-care education in order to improve the self-efficacy of patients for achieving desirable health behavior and controlling disease complications (7). Most of the MS training programs offered to clients are individual and contain pamphlets and booklets. Often, the quality of training programs is poor and not responsive to clients due to the large number of clients in the MS society and the small number of trained staff (16). One of the methods of implementing participatory training is using the skills of the working groups. One of the methods of team teaching is team members teaching design. The two hypotheses form the basis of the team members' teaching plan; the first hypothesis is that each team member studies a different part of the lesson that everyone is going to learn. Second, every learner can teach their team members, so each member acts as both a teacher and a learner. In the course of teaching, each section successfully taught demonstrates its responsibility to learners and others (14, 15); while team discussions among team members make participants share experiences and benefit from each other's experiences. teamwork also

offers greater adaptability, productivity and creativity than individual people. The results of studies such as the study by Haqhani et al. (2011) and the study of Mogharab et al. (2013) have emphasized on positive impact of using team member teaching methods (14, 15). Therefore, the use of team teaching methods has been repeatedly emphasized in studies today and team members teaching methods have not been used in patient education including MS patients. Also, considering the importance of self-care education in chronic patients and choosing the best educational method to improve their abilities, self-efficacy and participation in learning process, this study aimed to investigate the effect of self-care education based on team members teaching design on self-efficacy in patients with MS.

Methods

Study design

This study is a randomized clinical trial (ID Number: IRCT20190127042506N1) (Figure 1).

Setting and participants

This study performed at MS society of Jahrom city in Iran in 2019. To select the research units, people with MS who met the inclusion criteria were selected by simple random sampling and then randomly were assigned to one of two groups of intervention and control. The number of participants in each group was 14 persons based on the Omidi et al. Study (16) and with a error of 0.05 and power of 90%. Control was assigned to 20 patients. The sample size formula is as follows.

$$n = \frac{S_1^2 + S_2^2}{(\mu_2 - \mu_1)^2} F(\alpha, \beta) = 14$$

Inclusion criteria included definitive diagnosis of MS by a neurologist, age between 18-60 years, elapse of at least 6 weeks from last disease recurrence, ability for self-care, elapse of at least 2 years from the first diagnosis and willingness to participate in the study. Exclusion criteria included absence of more than 2 sessions during the intervention, withdrawal from the study during the intervention, inability of the patient to carry out the self-care program, acute and critical attacks during the intervention and suffering from other diseases such as heart disease, kidney disease, Respiratory, gastrointestinal, and other metabolic diseases.

The questionnaires used in this study were demographic characteristics questionnaire and multiple sclerosis self-efficacy scale. Also, a self-assessment questionnaire was used to determine the content of educational programs for the intervention group patients.

Measures

1. The demographic and illness information questionnaire consisted of 20 questions including 10 questions about demographic information like age, gender, marital status, educational status, job

and etc. the 10 questions about disease information like duration of illness, recurrence of illness in one year, hospitalization in one year, first symptom and etc.

2. The educational needs assessment questionnaire consisted of 16 questions that assessed the educational needs of MS patients in three domains: physical (4 questions), social (4 questions) and patients' health (5 questions). This questionnaire was designed by Dehghani et al. (2010). The validity of this questionnaire was determined by face and content validity and its reliability was confirmed by $\alpha = 0.98$ (17). In each domain by calculating the frequency of each question and considering the most frequent, educational needs in each domain were identified and then educational sessions were prepared based on the extracted educational needs for the intervention group patients.
3. The Multiple Sclerosis Self-Efficacy scale was developed by Rigby et al. in 2003 in the United Kingdom with 14 items and validated in Iran by Reshvanlo and Soleimani (2013). In validation the questionnaire in Iran, 3 items were reduced to 11 items due to content incompatibility and factor loading of less than 0.3. The questionnaire has 3 domains including independence and activity (4 items), personal control (3 items), concerns and interests (4 items). The Cronbach's alpha coefficient was 0.90 (18). This questionnaire is rated on a 5-point Likert scale from strongly disagree (1) to strongly agree (5). The minimum score in independence and activity and concern and interest dimensions is 4 and the maximum is 20. Also in the personal control dimension is a minimum score of 3 and a maximum of 15. Total self-efficacy score is 11-55 so that higher scores indicate higher self-efficacy.

Intervention

The education in the team member teaching design (intervention group) was that patients were divided into 5 groups and the researchers were given the necessary explanations about the process of training by the researcher in the first session. The role of the researcher in this group was to guide and discussions, oversee the implementation of the education process, follow the schedule and answer the patients' questions.

Steps of Team Members teaching design

- 1) Patients were divided into four 5-persons teams in the first session. After two sessions, 4 patients did not participate in the training sessions, the patients in continue to be divided into four groups of 4-persons.
- 2) Based on the results of the needs assessment, the researcher prepared the content of self-care education and divided it into equal volume and distributed it to all patients from a week ago.
- 3) On the day of implementation, according to the previous division of members, the first people the each of four team in one category, the second people the each team in one category, the third people the each team in one category, the fourth people the each team in other category. In fact, there were four groups of four persons that each had to provide a single content to their core teams.

- 4) Patients were then asked to discuss, exchange, and comprehend all four of the same subjects in each category for 10 minutes.
- 5) Upon completion of the first stage, all members returned to their core teams and presented their respective content to their teams for 10-15 minutes respectively, and were asked questions and answers.
- 6) Finally, the researcher summarized the contents and answers to patients' questions.

The training sessions were designed in 6 training sessions and one hour for each session. The first 45 minutes were devoted to the main topic and the last 15 minutes were devoted to answering patient questions and summarizing the materials. The content of the sessions in the intervention group included: the concept of self-care and its importance in controlling the complications of chronic diseases such as MS, familiarizing patients with appropriate diet in MS and following a healthy diet and restricting certain foods, methods for pain management and fatigue reduction and muscle relaxation techniques, ways to improve urinary tract disorders in patients, strategies to cope with stress, anxiety and depression, and physical activity included exercise in MS. At the end of each session, related pamphlets to educational content were provided to patients so that patients could repeat and practice the content they were taught.

Follow-up:

In the follow-up phase, the patients in the intervention group were given a month to use the training programs discussed during the sessions for reduce or eliminate their problems, and the researcher was contacted with the patients so that patients could interact with the researcher during one month. In addition, the researcher was present at the MS society site for two days a week, and patients were in-person with the researcher to monitor how their training programs were conducted and their questions answered.

In this study, multiple sclerosis self-efficacy questionnaire was completed in three stages including before intervention, immediately and one month after intervention in both groups. The control group was not given any training during the study, but the research group was provided self-care education program in two sessions for observing the research ethics after the patients completed the questionnaires one month after the intervention.

Data analysis

Data were analyzed using SPSS version 21 and statistical tests including descriptive tests, Kolmogorov-Smirnov for data normality, chi-square test, repeated measures analysis and ANOVA at the significant level of 0.05.

Ethical considerations

The research was approved by the Research Ethics Committee of Jahrom University of Medical Sciences in Iran (Ethics Approval Number IR.JUMS.REC.1397.152). The study was conducted based on ethical principles provided by the Declaration of Helsinki and the guidelines of the Iranian Ministry of Health and

Medical Education. Before the data collection, participants signed an oral and written informed consent. They were ensured about the anonymity and confidentiality of the data, and voluntary withdrawal.

Results

The eight (20%) of the samples were excluded during the study. The results of statistical tests showed that there was no significant difference between the two groups in terms of gender, marital status, education, job, and number of relapses during the last year (Table 1). Mean age in intervention group was 39 ± 12.143 and in control group was 38.62 ± 7.46 and there was no significant difference between intervention and control group ($p = 0.216$). Other demographic information is listed in Table 1.

Table 1. Distribution of Samples in Study Groups

Group Variable		Intervention N (%)	Control N (%)	χ^2	df	P value																																																
Gender	Female	13(81.3)	13(81.3)	0.253	2	0.881																																																
	Man	3(18.8)	3(18.8)				Marital status	Single	4(25)	4(25)	0.236	2	0.889	Married	12(75)	12(75)	Educational status	Undergraduate	7(43.8)	4(25)	7.73	4	0.102	Diploma	8(50)	4(25)	Academic	1(6.3)	7(50)	Job	housewife	13(81.3)	9(56.3)	3.22	4	0.521	Employee	0(0)	2(12.5)	other	3(18.8)	5(31.3)	Number of recurrences(1 year)	No recurrence	6(37.5)	8(50)	7.42	6	0.281	once	6(37.5)	3(18.8)	twice	1(6.3)
Marital status	Single	4(25)	4(25)	0.236	2	0.889																																																
	Married	12(75)	12(75)				Educational status	Undergraduate	7(43.8)	4(25)	7.73	4	0.102	Diploma	8(50)	4(25)		Academic	1(6.3)	7(50)				Job	housewife	13(81.3)	9(56.3)	3.22	4		0.521	Employee	0(0)				2(12.5)	other	3(18.8)	5(31.3)	Number of recurrences(1 year)	No recurrence		6(37.5)	8(50)	7.42				6	0.281	once	6(37.5)	3(18.8)
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	Academic	1(6.3)	7(50)				Job	housewife	13(81.3)	9(56.3)	3.22	4	0.521	Employee	0(0)	2(12.5)	other	3(18.8)	5(31.3)	Number of recurrences(1 year)	No recurrence	6(37.5)	8(50)	7.42	6	0.281	once	6(37.5)	3(18.8)	twice	1(6.3)	5(31.3)	More	3(18.8)	0(0)																			
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Self-efficacy of patients

Patients' self-efficacy was assessed before, immediately and one month after the intervention. The mean and standard deviation of the data collected in both intervention and control groups are presented in Table 2. Patients' self-efficacy increased significantly immediately and one month after intervention in all dimensions including independence and activity, personal control, and concerns and interests in

intervention group but no significant difference was observed in control group. Significance of difference between groups was assessed by means of repeated measurement before, immediately and one month after intervention. The results showed that the trend of changes in the intervention group was significantly increased ($p = 0.001$), while the mean score of self-efficacy in the control group before the intervention had not significantly different than immediately and one month after the intervention (0.220). There was also a significant difference between the process of change in the control group and the teaching by team members teaching design ($p = 0.002$).

Table 2: Mean and standard deviation of self-efficacy scores in intervention and control groups

Group	Time	Intervention Mean \pm SD	Control Mean \pm SD	P value	
				Intervention	Control
Independence and activity	Before intervention	13.12 \pm 2.89	12.75 \pm 2.79	0.001	0.304
	After intervention	15.93 \pm 2.01	12.5 \pm 2.70		
	After Follow up (One month)	16.25 \pm 1.43	12.37 \pm 2.80		
Personal control	Before intervention	10.93 \pm 2.59	9.68 \pm 1.85	0.002	0.056
	After intervention	12.43 \pm 2.09	9.12 \pm 1.96		
	After Follow up (One month)	13.18 \pm 0.83	8.87 \pm 1.40		
Concerns and interests	Before intervention	13 \pm 3.84	13.62 \pm 3.68	0.001	0.333
	After intervention	16.37 \pm 2.18	13.37 \pm 3.66		
	After Follow up (One month)	16.43 \pm 1.86	13.37 \pm 3.68		
Total self-efficacy score	Before intervention	37.06 \pm 6.77	36.06 \pm 6.87	0.001	0.203
	After intervention	44.75 \pm 4.10	35 \pm 6.19		
	After Follow up (One month)	45.87 \pm 2.68	34.62 \pm 5.71		

The difference between the mean scores before intervention, immediately and one month after the intervention of the team members teaching design with the control group scores indicates the effectiveness of self-care education by teaching team members on patient self-efficacy (Table 3).

Table 3: Comparison of the mean difference between groups in self-efficacy

Variables	Comparison groups	Mean difference	Standard error (SE)	P value
Self-efficacy	Control-intervention	10.275-	1.40	0.001

Discussion

The aim of this study was to investigate the effect of self-care education by team member teaching design on self-efficacy in MS patients. The results of statistical analysis showed that the mean score of self-efficacy in the intervention groups was significantly increased, so that the mean score of self-efficacy in the teaching team was 37.06 ± 6.77 before Intervention, immediately after the intervention increased to 44.75 ± 4.10 and then increased to 45.87 ± 2.68 after one-month follow-up; the trend of changes in mean self-efficacy score before intervention, immediately and one month after intervention showed that mean self-efficacy scores in the intervention group was significant ($p = 0.001$) in the positive direction due to attending training sessions and implementing self-care training program in the sessions. The follow-up has been one month shows that over time the effects of education have not disappeared but rather with follow-up and implementation of training in the activities and daily life of patients, it has improved self-efficacy within one month after the completion of training sessions. The results of Maslakpak and Raeesi's studies (13), Daniyali et al. (11), Aghakhani et al. (19), Bosman et al. (20), Jongen et al. (21), also confirm the findings of the present study.

According to Maslakpak and Raeesi's (2013), implementation of self-management program along with regular follow-up has increased self-efficacy in MS patients. The part of the self-management program used in this study such as diet, stress and anxiety control and physical activity is consistent with the content and educational programs of the present study, so that the mean of self-efficacy in the three dimensions of independence and activity, concerns, and personal control has been improved in this study (13).

The results of the study of Aghakhani et al. (2016) showed that the mean of self-efficacy in post-training in myocardial infarction patients was significantly improved (19 which is consistent with the findings of the present study. Also, the results of Jongen et al.'s (2012) study showed that 6 months after a health plan for patients with MS may experience improved self-efficacy and higher health-related quality of life (21). Thus, patient participation in self-care and patient support in the implementation of health plans in following-up by nurses can help the achievement patient in independence and self-control. Since self-efficacy is a multidimensional concept, so different factors such as personality traits and self-esteem of patients as well as contextual factors such as the level of available social support can effect on its. Therefore, not only is it necessary to patients education about self-care, but it also empowers them with their sense of ability and control, reducing the level of uncertainty and increasing motivation and sense of self-efficacy. Patients with MS also have a number of problems including weakness, abnormal walking, fatigue, and mental problems that make it difficult for them to perform functional roles and depend on the family and health care system. However, as identified in the present study, self-care training programs help them to use their abilities in a better matter and become more independent and less dependent on the health system.

There was a significant difference in self-efficacy between the control and intervention groups in the present study ($p = 0.001$). This study showed the method of team members teaching design is effect on patient self-efficacy. In this regard, Mogharab et al. (2012) stated that team members teaching design can effectively lead to increased learning compared to the lecture usual method (15), which is in line with the findings of the present study. The results of study conducted by Hassanzadeh et al. (2013) Showed that using collaborative and cooperative methods is more effective than traditional and inactive teaching methods such as lectures (22). Also, the results of study by Haqhani et al. (2011) indicate that team members' teaching plan is more effective than the lecture method. The team approach creates a new sense of learning, a pleasant atmosphere in the classroom, an exciting teaching method, and no feeling of fatigue at the end of the class (14). In the present study, the same emotion was observed in patients, and since self-efficacy as a bridge between knowledge and practice provides the motivation for performing a behavior, delegating the education to patients in addition to their awareness. Raising self-care helps them to be independent in their learning and perform better in delivering training, and because they benefit from team members' experiences alongside educational materials, health behavior it is more evident in their performance, perhaps because of their mean self-efficacy score using the team members teaching design has been upgraded.

The study by Mohammadi et al. (2017) showed that the mean of self-efficacy after from peer education increased (23). in the present study, the teaching method was implemented as a team member teaching, although the general methods of teaching differed, However patients' participation in the learning of their team members is evident in both ways. Also, educational materials presented in this study such as fatigue control, pain, anxiety and stress control, exercise program are in common with the present study. Therefore, patients 'involvement in learning-teaching may facilitate patients' learning and improve their self-efficacy. The Wejina et al. (2011) also found since in participatory learning the success of each group member depends on the success of the other group members, all individuals strive to learn and learn more (24). In this study like the present study, learning was more due to the participation and involvement of learners in the teaching-learning process. If people are to learn quality together, they need to be educated together to understand their common goals. Therefore, achieving this goal requires the use of participatory and team training.

According to the results, self-care education by team members teaching increased self-efficacy in the intervention group; in other words, self-care training by team members teaching was effective. The results of this study can be used as a complementary method to increase the level of self-efficacy in MS patients.

Study limitations

Decrease in sample numbers and exclusion during study programs, lack of control over other training such as mass media training, and perform study at a single MS Society center were limitations of the present study that should be cautious in generalizing the results.

Conclusion

Based on the conducted research, self-care education using team members teaching design lead to improve the self-efficacy of MS patients. Since team education approach can provide a simple and safe learning for patients, it can increase motivation and promote health behaviors of patients. Hence, it can be used as a valuable tool for improving, treating, and controlling patients' physical and psychological complications as well as increasing their self-efficacy. Benefits such as patient's participation in education, motivation in patients, ease of use by nurses, facilitation of learning, and cost-effectiveness can introduce self-care teaching methods by team members teaching design as a useful method.

Declarations

Acknowledgements

This article is taken from the dissertation of Master of sciences in nursing approved by Jahrom University of Medical Sciences, which has been registered with IRCT20190127042506N1. The authors would like to gratefully thank all patients who participated in this study.

Conflicts of Interest

The authors declare that they have no competing interests.

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Figures

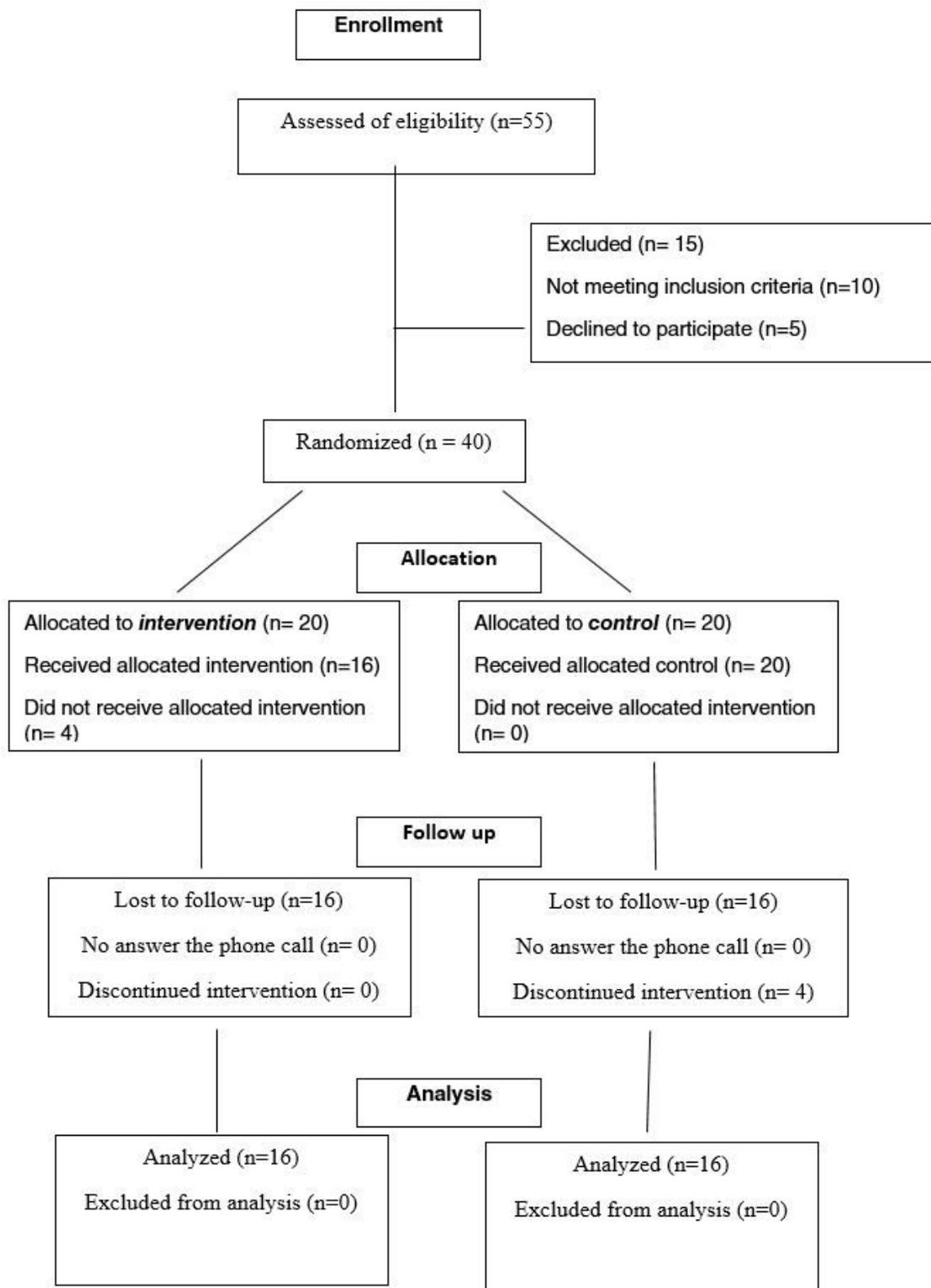


Figure 1

CONSORT FLOW DIAGRAM OF THE STUDY