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# Comparison the Impact of Home Care Services and Telephone Follow up on Rehospitalization and Mental Condition of Schizophrenic Patients

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**Abstract:** Many difficulties of rehospitalization and readmission and also high cost of hospitalization has caused paying more attention to after care follow up services in chronic disorders especially schizophrenia. This study aimed to compare the impact of two follow up methods in rate of rehospitzalization, length of hospitalization and mental condition of schizophrenics. In this research, 62 people who were officially diagnosed as schizophrenic has participated in this experimental study. Participants, using Randomized Permuted Block Method, has been placed in three groups. The 21 persons in home care group, 21 persons in telephone follow up group and 20 persons in control group. Demographic questionare and BPRS was filled for all participants and after each month of intervention BPRS was refilled. In order to analyze the data, ANOVA, sequential LSD and Paired t-test were utilized. Results showed home care group had lower rate of rehospitalization and shorter length of hospitalization. This group had statistically significantly better mental condition than control group. Telephone follow up group members discharged sooner and experienced significantly better mental condition but more frequent rehospitalization than 2 other groups. Nursing home care services are more effective than telephone follow up and can lead to improvement of schizophrenic mental condition, reduction in rate of rehospitalization and length of study. Telephone follow up services leads to increase in hospitalization but decrease in number of the days of hospitalization and also improvement of mental condition which shows the impact of intervention.

**Key words:** Schizophrenia, rehospitalization, relapse, nursing home care services, telephone follow up, brief psychiatric rating scale

## INTRODUCTION

Schizophrenia has been emphasized as the most common psychotic disorder among population, especially young people with the most undesirable consequences including suicide, divorce, sever reduction in social and personal functioning and long term hospitalization (Beebe, 2003). All mental disorders have nature of long term duration, relapse, hospitalization, family separation and risk of infections tend to more emphasize on rehabilitation and tertiary prevention in such disorders (Khoshknab, 2007).

Different types of after care follow up may decline the increasing cost of hospitalization which now-a-days is the most significant issue in health and clinical services. Health maintenance, rehospitalization prevention and early discharge are the main goals of health care institutes (Malakouti, 1995). Related to this, one strategy is to apply discharge planning. Thompson *et al.* (2003) indicated that after care services relates to length of hospitalization and after care services, patients who require more after care services, require more follow up services too (Thompson, 2003).

Some after care interventions can reduce the rate of psychiatric rehospitalization per year in some countries (Tavallaii *et al.*, 2005). Home care services and telephone follow up can be counted as those interventions. Home care services include broad range of care provides for patient and his family. Home care services include different kinds of services deliver to patient and his family at home and is part of psychiatric care available for them which is established upon potential capacity of society (Navidyan *et al.*, 2001). Chronic mentally ill patients are the ones who benefit the most from home care plans (Khankeh, 2002). Home care services cost less than hospitalization and health care providers including nurses can transmit permanent services from hospital to home, since the patient recovers or passes away also because the force of insurance institutes patients are discharged

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earlier from the hospitals and need to care provided for them in their homes (Brimblecombe *et al*., 2003). Kampman *et el*. (2003) indicated that about 50% of schizophrenics who received home care services showed no need to hospitalization and remained ones showed significant reduction in hospitalization length (Kampman *et al*., 2003). Findings of Fenton *et al*. (1979) showed that home care resulted in significant reduction in number of the days of hospitalization (Kampman *et al*., 2003). Also Khoshknab, according to his study on 48 schizophrenics in two home care group and control group suggested that home care follow up will reduce the amount relapse.

Reminding treatment follow up covers all methods which aim to encourage patients to more involve in treatment process and more presence in clinical centers and are done by telephone reminding, telephone follow up, telephone consultation, mail reminder and financial support methods (Reda *et al*., 2001). Many studies have conducted to determine the effectiveness of telephone consultation. According to Wong *et al*. (2005) although, telephone consultation worth less than face to face visit but is counted as a valuable method in providing care because of many useful short term interventions and also shifts that could be made by it from hospital-centered services to socio-centered services and care provider-centered to patient-centered services (Wong *et al*., 2005). Primary follow up can be done by telephone and the main point is to keep therapeutic communication. Follow up services should always be available for patient and family should have administration ease should be simple and have low costs (Will, 2002) which telephone follow up covers them all. Simple availability, easy application for patients and costs decline are advantages of telephone consultation. A telephone follow up can make possibilities like availability of health care providers most of the times, easy application in professional reports, consultation, assessment and management of physical and mental diagnoses of patients, implementation and medical management, monitoring of therapeutic diet and response to medication, training and supporting of patients and families (WHO, 2001). McKinstry *et al*. (2009) suggested in their study that telephone consultation, especially in counties, has solved many geographical problems, has shortened time of providing services and has made patients to achieve their goals easier and finally increased their satisfaction (McKinstry, 2009).

Beebe and Smith (2008) showed that weekly telephone follow up can increase patient's acceptance toward treatment and tend to reduce the amount of relapse (Beebe and Smith, 2008). Regarding that home care services and telephone follow up are different in cost and easiness, this study has been conducted to compare and determine the impact of these two follow up method on numbers of rehospitalization, length of hospitalization and mental condition of schizophrenic patients in a psychiatric center in Bandar Abbas, Iran.

## MATERIALS AND METHODS

This experimental study aims to compare the impact of telephone follow up and home care services on rehospitalization and mental condition of schizophrenics. Study sample consist of 62 schizophrenics of EbneSina psychiatric center in Bandar Abbas, Iran (the only psychiatric care center in this city). These 62 people were entered to study and has been observed for 4 months. Using randomized permuted block, participants were placed in three groups; two test group and one control group. First empty randomized blocks were determined then all patients who were discharged from the psychiatric center at the time of study, considering inclusion criteria were entered to the study and placed in study groups. Inclusion criteria for study include participant has been officially diagnosed as schizophrenic by a psychiatrist due to DSM-IV-TR, participant has a family that can take care of him, one of participant family member, at least be educated and able to read and write as well, participant and family has available phone line, participant is not in acute phase psychosis and is discharged from hospital, participant and family have will to take part in study and all medical history assess and handicap or chronic disorder which needs to life time care does not exist (like epilepsy, addiction, mental retardation). Study tools include a demographic data questionnaire which has made by researcher according to original form and covers variables like age, gender, marital status, past medical history and hospitalization history, etc. A check list also has been applied in order to record information of participants as length of hospitalization, number of rehospitalization and amount of relapse. The main study tool was BPRS (Brief Psychiatric Rating Scale) which is utilized to measure severity of symptoms in study. This scale has been made to determine mental condition by Overali and Gorham. They wanted to create a scale which provide administration ease and also can assess all mental signs and symptoms. So after this creation, this scale has been used in many studies, especially studies about schizophrenia in order to assess mental pathology (Khoshknab, 2006). This tool has been translated to Persian and utilized in many researchers including Khoshknab's study. Reliability and validity of the tool has been proved and in Farhadi's study, correlation coefficient was $r = 0.72$ and reliability

coefficient of the tool has determined by alpha chronbach r = 0.8 (Khoshknab, 2006, 2007). Demographic questionare and BPRS have been filled for all participants then following interventions were done on each participant in test groups; in home care group, first demographic questionare completed for general information of participant and BPRS to assess mental condition that utilized as pre-test. Home visit was done for each participant in their homes per 2 weeks in 3 months which means exactly six home visits were performed for each participant and at the end of each month BPRS was completed for every patient and his mental condition estimated and the score of 3rd month has been considered as post-test. The intervention package considered for home care visit consist of trust and family participation, assessment of patient's mental status, medication complication and relapse signs, family training and providing important information about medication complication and relapse signs, monitor the consumption of prescribed medication, control of therapeutic side effects, train and guide family about disorder, relapse signs, types of treatment, necessity of medication application, prevention and treatment of therapeutic side effects, consultation about family problems and providing medication and medical support if possible. In telephone follow up group the mentioned tests were done and a contract made between patient, family and nurse and the nurse was responsible to coordinate these appointments. Telephone contact intervention was made to each participant per 2 weeks for 3 months. The 1st phone call in every month was made to help recognition of medication complication, relapse signs and assessment of probable problems. The 2nd phone call was made to remind them the date of visit in clinic and if necessary giving advices to patient and family which more often patient and family needed consultation about their problems. Due to cognition about patients disorder and their therapeutic diet, they were asked about complication and relapse sighs. Then necessary recommendation about relapse signs and medication complication were provided for them. Time of conversation was considered about 20 min but it could have variation regarding patient or family will. At the end of each month when the patient came to be visited in clinic BPRS was filled for him and considered as post-test. Finally, results were compared with each other. In control group, steps of study were explained for patient and family and if they will, they would declare their consent by filling a consent form and at that time demographic questioner and BPRS were filled for them. Then study questionare was completed again for them in their each month visit. Finally, three after discharge questionare were filled for them and in cases that patient could not come to visitin clinic or hospital, the nurse would fill their mental condition assessment questionare at their homes. The information about hospitalization were taken from admission ward weekly in order to record new hospitalization of sample study if exists. Also, family was asked to inform the nurse or health care provider by a telephone number provided for them about rehospitalization of patient.

To analyze data for matching variables, Fisher exact statistical tests and ANOVA have been utilized (because >20% of spaces were <5, ANOVA was preferred than Chi-square ($\chi^2$)). ANOVA, sequential LSD, Paired t-test were utilized in main findings of the study. Normality of study variables were examined by Kolmgroph-Smirinoph Test and equity of variances has been examined by Levin test. For testing hypotheses significant range of 0.05 has been considered. Patient and family were informed about research ethical codes and permission form was taken from ethic committee of Welfare and Rehabilitation University and each participant and his parent/caregivers, consented and each assented to his or her results being used for research purposes. It is also mentioned that all research data would be confidential and if participants will they could exclude from the study, the exclusion would not lead to services disconnection and no cost accounted for patient and family.

## RESULTS AND DISCUSSION

Demographic traits of study samples and matching of variables was examined and variables distribution showed no significant contrasts and groups were matched in all items. Comparison was done among average scores of rehospitalization, length of hospitalization and mental condition of participants before intervention and results revealed no statistical significant differences in groups shows (Table 1).

Table 1: Matching demographic variables assessment in home care, telephone follow up and control groups

| Variable groups | Home visit | Telephone follow up | Control | p-values |
|---|---|---|---|---|
| Average of age | 39.09 | 32.66 | 35.95 | 0.198 |
| **Gender** | | | | |
| Female | 47.60 (%) | 72.20 (%) | 65.00 (%) | 0.155 |
| Male | 52.40 (%) | 23.80 (%) | 35.00 | |
| **Marital status** | | | | |
| Married | 57.20 | 28.50 | 45.00 | 0.650 |
| Single | 42.80 | 61.50 | 55.00 | |
| **Occupation** | | | | |
| Occupied | 9.60 | 9.50 | 30.00 | 0.090 |
| Non-occupied | 90.40 | 90.50 | 70.00 | |
| **Diagnoses** | | | | |
| Paranoid | 14.30 | 0.00 | 0.00 | 0.124 |
| Hebephrenic | 71.50 | 90.50 | 95.00 | |
| Catatonic | 14.30 | 4.80 | 5.00 | |
| Residual | 0.00 | 4.80 | 0.00 | |
| Length of hospitalization | 24.71 | 24.85 | 24.95 | 0.998 |
| Rehospitalization | 1.09 | 1.04 | 1.05 | 0.616 |
| Mental condition | 30.66 | 30.38 | 30.45 | 0.990 |

Table 2: Paired group comparison in post-test of study sample

| Variables | Group (I) | Compared case (II) | Mean diff. | SE | Probability (p-values) |
|---|---|---|---|---|---|
| Rehospitalization (relapse) | Home visit | Telephone follow up | -0.904 | 0.122 | 0.001 |
| | Control | Home visit | -1.011 | 0.129 | 0.001 |
| | Telephone follow up | Control | -0.106 | 0.129 | 0.791 |
| Mental condition | Home visit | Telephone follow up | -1.760 | 2.330 | 0.452 |
| | Control | Home visit | -8.750 | 2.350 | 0.001 |
| | Telephone follow up | Control | -6.980 | 2.300 | 0.004 |
| Length of hospitalization | Home visit | Telephone follow up | -0.285 | 3.570 | 0.937 |
| | Control | Home visit | -23.590 | 3.610 | 0.001 |
| | Telephone follow up | Control | -23.300 | 3.610 | 0.001 |

Table 3: Comparing average scores of rehospitalization, mental condition and length of hospitalization in pre- and post-tests in under observed groups

| | Mental condition | | | | Rehospitalization | | | | Length of hospitalization | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variables | Pre-test average | Post- and pre-test average | t-test | p-values | Pre-test average | Post-test average | t-test | p-values | Pre-test average | Post-test average | t-test | p-values |
| Home care group | 28.63 | 26.94 | 4.49 | 0.001 | 1.09 | 0.047 | 22.00 | 0.001 | 24.71 | 0.857 | 10.810 | 0.001 |
| Telephone follow up group | 30.38 | 28.71 | 2.88 | 0.009 | 1.05 | 3.850 | -3.28 | 0.004 | 24.85 | 1.140 | 7.600 | 0.001 |
| Contrl group | 30.45 | 35.70 | 1.80 | 0.088 | 1.05 | 1.050 | 0.00 | 0.999 | 24.95 | 24.450 | 0.120 | 0.900 |

Rehospitalization, length of hospitalization and mental condition variables have been examined after intervention and the results showed that significant differences has been reported among rehospitalization of home visit group versus telephone follow up and control groups (p = 0.001) which means rate of rehospitalization was in home care group was <2 other groups. There has been no significant differences between rate of rehospitalization in telephone follow up and control group (p = 0.791). Study findings about mental condition in groups revealed that there was significant difference in mental condition post-test scores in home visit group comparing control group (p = 0.001) which means that mental condition of home care group has improved but there has been no significant contrast in home visit group and telephone follow up group (p = 0.452). Also, mental condition post-test scores of telephone follow up group showed significant differences with control group (p = 0.004) which can be mentioned that mental condition of telephone follow up group was better. Study findings about length of hospitalization variable showed that length of hospitalization post-test scores in home care group revealed significant differences with control group (p = 0.001). As it mentioned that length of hospitalization in home visit group was less but no significant was seen between home care and telephone follow up pot tests (p = 0.937). Length of hospitalization post-test scores in telephone follow up group showed significant contrast with control group (p = 0.001) which means that length of hospitalization was shorter in telephone follow up group (Table 2 and 3).

According to increase in hospitalization costs and psychiatric centers policies to decline length and number of hospitalization, care is being transmitting from hospitals to families. Continues treatment increasing health care services in day care clinics, reduce in rate of hospitalization and priority of psychiatric social centered services are the ones that can be mentioned. Because of technology promotion, population increasing growth and increase in clinical and rehabilitation costs, providing nursing home care services which is performing in many countries can be applied as an appropriate way in patients need intensive and special care (Will, 2002).

One important finding of this study is that home care services in schizophrenic patients leads to reduction in rate of hospitalization, length of hospitalization and also promotes their mental condition as showed in Fenton *et al.* (1979)'s study, in 1 year follow up of 155 schizophrenics home care services resulted in significant reduction in numbers of the days of hospitalization (Fenton *et al.*, 1979). Findings of Gillis *et al.* (1990)'s study, suggested that after 1 year home care follow up, rate of rehospitalization in 51 patients has been decreased to 31.5% (Gillis *et al.*, 1990).

Also in Malakouti (1995)'s study, supported this study results and indicated that 162 schizophrenics who received home care services showed significant lower rate of rehospitalization and relapse after that follow up (90% reduction) and showed better occupational and social functioning too (60%) (Malakouti *et al.*, 1998). Findings of Khoshknab and Kaldi (2007) in a experimental study about mental condition of 24 schizophrenics who received nursing home care services are matched with results of this study and showed that mental condition of patients showed significant statistical difference and has been improved after intervention (Khoshknab, 2007; Khoshknab and Kaldi, 2007).

Results of the study also are similar to Spaniel *et al.* (2008) study which conducted by using telephone follow up on 45 schizophrenic patients and its effectiveness has

been assessed before and after intervention and results showed that there was significant reduction in numbers of the days of hospitalization than before (p = 0.004) (Spaniel *et al*., 2008). However, study findings are not supported by Beebe study results which has conducted upon psycho-socio telephone consultation intervention to encourage patient to continue treatment and showed that applying that method has increased acceptance and insight toward disorder, so the rate of relapse would be decreased (p = 0.0298). Regarding researcher's opinion, this contrast could be due to time intervals of phone calls which was per 2 weeks in this study has been once a week in Beebe (2008)'s study. Findings of this study can be considered identical with Malakouti *et al*. (1998)'s study which has been conducted on schizophrenics for 3 years and beside other follow up intervention methods telephone follow up was applied and indicated that rate of relapse and number of the days of hospitalization had significant decrease than before but amount of relapse and rehospitalization showed no significant reduction in this research.

## CONCLUSION

As shown in study findings, nursing home care services are more effective than telephone follow up and can lead to improvement of schizophrenic mental condition, reduction in rate of rehospitalization and length of study. Telephone follow up services lead to increase in hospitalization but decrease in number of the days of hospitalization and also improvement of mental condition which shows the impact of intervention. So according to research findings, it is suggested that home care services will be considered as a part of discharge planning and if not possible, telephone follow up method can be a good alternative beside other follow up methods.

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