

Patient and Provider's Experience and Perspective in Addressing Barriers to Medication Adherence Among Noncommunicable Disease Patients in Rural Puducherry, South India—A Qualitative Study

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Abstract

Background: Trend in morbidity and mortality due to noncommunicable diseases (NCDs) is rising because of poor control status. Medication nonadherence is one of the most common and modifiable causes of inadequate control status. **Objectives:** To examine the barriers in drug adherence among NCD patients in rural Puducherry. **Methods:** This qualitative study includes in-depth and key informant interview conducted among 6 NCD patients and 4 health-care providers. Interviews were audio-recorded, and transcript was prepared in verbatim format. Thematic content analysis was done to derive the categories and themes. **Results:** Major barriers for nonadherence to medications found were stress, substance abuse, forgetfulness, lack of family support, and high case load of health facilities. Corrective measures suggested to address the barriers were to provide health education to patients and family members, awareness campaigns in community, and health education sessions at the clinic. **Conclusion:** Psychological factors such as stress, social isolation, and negligence are major barriers for drug adherence. Health education session at community and health system is needed to improve the adherence.

Keywords

diabetes mellitus, hypertension, medication adherence, noncommunicable diseases, qualitative research

Introduction

Noncommunicable diseases (NCDs), especially cardiovascular diseases and diabetes mellitus, were found to be the leading cause of mortality worldwide (1). Morbidity, mortality, and disability attributable to the major NCDs account for almost 60% of all deaths and 47% of the global burden of disease (2). Majority of deaths occur among low- and middle-income countries like India and China (3). Noncommunicable diseases account for 53% of all deaths in India. Key contributor to the increasing burden of morbidity and mortality due to NCDs is poor control status of the patients (4).

Many factors contribute to the poor control status in NCD patients, which include lack of integrated care at health system level, poor adherence to self-care recommendations, and compliance to medications (5). Among these factors, medication nonadherence is one of the most common and potentially

modifiable causes of inadequate control of the NCD. Medication adherence has been defined by the International Society for Pharmacoeconomics and Outcomes Research as the “extent to which a patient acts in accordance with the prescribed interval and dose of a dosing regimen” (6).

Globally, it has been reported that full compliance to the treatment for chronic illness as 50%, and this is far less in case of developing countries like India (7). Studies around India have reported varying prevalence of nonadherence

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among NCD patients (8–10). Poor medication adherence results in increased out-of-pocket expenditure due to outpatient care, emergency visits, and hospitalization for management of complications due to uncontrolled status.

Even though many studies have been conducted regarding the prevalence of nonadherence among NCD patients throughout the Indian population, there was only limited literature available exploring the barriers and facilitating factors in adhering to the medications. Hence, the current study was done to capture the patients and providers' perspective in addressing barriers to medication adherence among NCD patients in rural Puducherry, South India.

Methods

This was a pure qualitative study following descriptive theoretical underpinning and constructive paradigm. Qualitative part involved an in-depth interview among NCD patients to explore the barriers and facilitating factors for drug adherence. This was followed by key informant interview of health workers involved in providing services to NCDs in rural health center of a tertiary care institute in Puducherry. Key informant interview was done to get suggestions to improve the drug adherence levels in their health center.

Study Setting and Period

The study was done among the patients receiving NCD services and health-care workers from Jawaharlal Institute of Postgraduate Medical Education & Research (JIPMER) rural health center. The JIPMER rural health center caters to a population of around 10 000 spread over 4 villages, namely Ramanathapuram, Thondamanatham, Pillaiyarkuppam, and Thuthipet. All the 4 villages were located within 4 km of the health center, which was located in Ramanthapuram village. Health services were provided by medical officer, undergraduate intern trainees, postgraduates posted from Department of Community Medicine, JIPMER supported by nursing staff, and public health nurses. Study was conducted during February to March 2018.

Phase I: In-Depth Interview

In-depth interview was conducted among 6 vocal and willing patients who were attending the NCD clinic. Three patients who were found to be adherent to medications and 3 patients who were nonadherent were purposively selected for the interview. Patients who were adherent interviewed to explore more on facilitating factors, and nonadherent patients were interviewed to explore the barriers in adherence. None of the approached patients refused to participate in the study. All the 6 patients were interviewed using a pretested semistructured interview guide. Demographic details of the participants were 3 male elderly patients with diabetes, 1 middle-aged woman with hypertension, 1 middle-aged male with diabetes, and 1 middle-aged

male with hypertension. Interviewer was the principal investigator, a male postgraduate student in a tertiary care institute who was fluent in the local language. Interviewer was formally trained in a qualitative research workshop and also has previous experience in qualitative research. All the interviews were conducted within the premises of rural health center during their visit to NCD clinic.

Interview was started after obtaining the consent and explaining the purpose and motive of the study. Privacy of the information was ensured by conducting the interview in an isolated room without any presence of nonparticipants. Participants were ensured confidentiality of the information obtained through the interview. Objective of the interview was to explore the barriers and facilitating factors for drug adherence among the patients who receive services in NCD clinic of rural primary health center in Puducherry. All the interviews were audio-recorded with consent. Each interview took around 15 to 30 minutes. Field notes were taken during the interview. At the end of the interview, summary was presented to the participants for validation of the data collected. Transcription was done using verbatim format within 2 days of data collection to prevent the loss of information.

Phase II: Key Informant Interview

Four key informant face-to-face interviews were conducted with the vocal and willing health-care workers who were selected purposively. Four postgraduate doctors (2 male and 2 female doctors) who were providing services for NCD patients in the rural health center of a tertiary care center were selected for the interview. Interviewer was the principal investigator who conducted all the in-depth interviews. All the interviews were conducted within the premises of rural health center at the end of NCD clinic. After obtaining the consent and explaining the purpose of the study, interview was conducted using a pretested semistructured topic guide. Participants were ensured privacy and confidentiality of the information obtained through the interview. The objective of the interview was to find the solutions to improve the drug adherence among the NCD patients attending a rural primary health center of Puducherry.

Interview was audio-recorded after obtaining consent. Doctors were interviewed for their perception regarding drug adherence levels among the patients attending the health center. They were asked to give suggestions and solutions to improve the medication adherence among the NCD patients. Each interview lasted for 20 to 30 minutes. Field notes were taken during the interview. Toward the end of the interview, participants were provided the summary of the interview for validation. Transcription was done using verbatim format within 2 days of interview to prevent the loss of information.

Analysis

Collected data were transcribed in verbatim format. Participant's statements were taken as unit of analysis. The coding

was done at the beginning of the study by an inductive method, but with the advancement of the research and identification of the contents, deductive approach for the review was also used. Descriptive manual content analysis was done to derive the categories and themes. Data collected were validated by the principal investigator. These were reviewed by another investigator to reduce subjective interpretation. Constant comparative analysis was done to ensure the credibility and reliability of the data. Study was reported in accordance with the Consolidated Criteria for Reporting Qualitative Research.

Results

A total of 10 interviews were conducted (4 key informant interviews with health professionals and 6 in-depth interviews with NCD patients). Major themes that were developed for the interview through deductive approach were the facilitating factors and hindering factors influencing the drug adherence and suggestions and solutions in improving the drug adherence among the NCD patients attending a primary health-care center in rural Puducherry. Each of the themes was categorized into patient, family, community, and health system level.

Figure 1 depicts the facilitating factors influencing the drug adherence among NCD patients. It was perceived by a male elderly diabetes patient (MEDP) that the patients need to remember about the importance of adherence and the risk of complications if not adhering to drugs properly. Male middle-aged hypertension patient (MMHP) reported that bad experiences in the past like death of family members because of NCDs make the patients to be adherent to medications. Assistance from neighbors and friends in accompanying for health visit or collecting drugs when the patients are feeling unwell can help to adhere to drugs properly as per female elderly diabetes patient (FEDP). A male postgraduate doctor (MPD) suggested that frequent counseling at each and every visit for adherence can help to improve the rate of adherence substantially. They also reported that diabetes patient tend to be more adherent to medication when compared to hypertensive patients as ill effects of nonadherence occur rapidly among diabetes patients.

We need to remember what all complications can occur if we are not taking the drugs properly; because doctors can tell only once, we are the ones who should take care of our own health. (MEDP)

I have seen that some of the people whose family members have died due to a similar disease which they are suffering from were found to be more adherent as they have seen what will happen if they do not take drugs properly. (MMHP)

Me and my friends who also have the same disease used to go together to the hospital to collect the drugs; but whenever I do not feel well, they used to collect drugs for me also; this helped me to take drugs regularly. (FEDP)

We need to counsel all the patients during each and every visit regarding the importance of drug adherence and what all complications can occur if they are nonadherent; we can even show some videos and pictures to motivate them to take drugs properly. (MPD)

Diabetes patients tend to be more adherent to medication as they get dizziness or develop symptoms quicker than hypertensive patients when they are not adherent to medications. (MPD)

Figure 2 represents the hindering factors influencing the drug adherence among NCD patients. Most of the patients interviewed reported that stress from other spheres of life make them to forget about taking the drugs properly. Some participants reported that they did not want to share about their disease status to their friends and relatives. This can make the patient devoid of family and social support for adherence. Health professionals felt that family members are not counseled regarding the importance of adherence as they can help reminding the patients to take pills regularly. They also reported that diabetes patients are scared of hypoglycemic effects with the drugs, which are not the case with hypertension or bronchial asthma patients.

Whenever I have some tension especially work-related tension, I forget to take the pills; Sometimes, I even feel why I should take the medication out of the anger. (MEDP)

I don't tell my friends and relatives about my disease status; I feel a bit embarrassed to tell that to them. (MMHP)

Patients need to be reminded during each and every visit regarding the importance of adherence and what complications can occur if not adherent to medications. (MPD)

Patients with diabetes usually are scared to take drugs at the morning time because of risk of hypoglycemia and they can't work effectively if they develop such symptoms; while patients with hypertension or bronchial asthma are not scared to take drugs because of any side effect of the drug Female Postgraduate Doctor (FPD).

Figure 3 depicts the suggestions and solutions for improving drug adherence among the NCD patients. Almost all of the health professionals suggested that keeping a separate station for counseling the patients regarding drug intake can improve the adherence level substantially. They also suggested that peer support groups can be formed at the patient level which can motivate the patients to adhere to the drugs properly. Involvement of Anganwadi worker (AWW), color coding of drugs, and enabling family support were some of the other solutions reported by the health professionals.

There should be a separate station during every NCD clinic where health workers need to teach the patients which drugs should be taken at what time and reinforce the importance of adherence to medications. (MPD)

Peer support groups can be formed in each of the PHC through which the patients who are prone to be nonadherent to medications can be motivated to adhere properly to medications. (FPD)

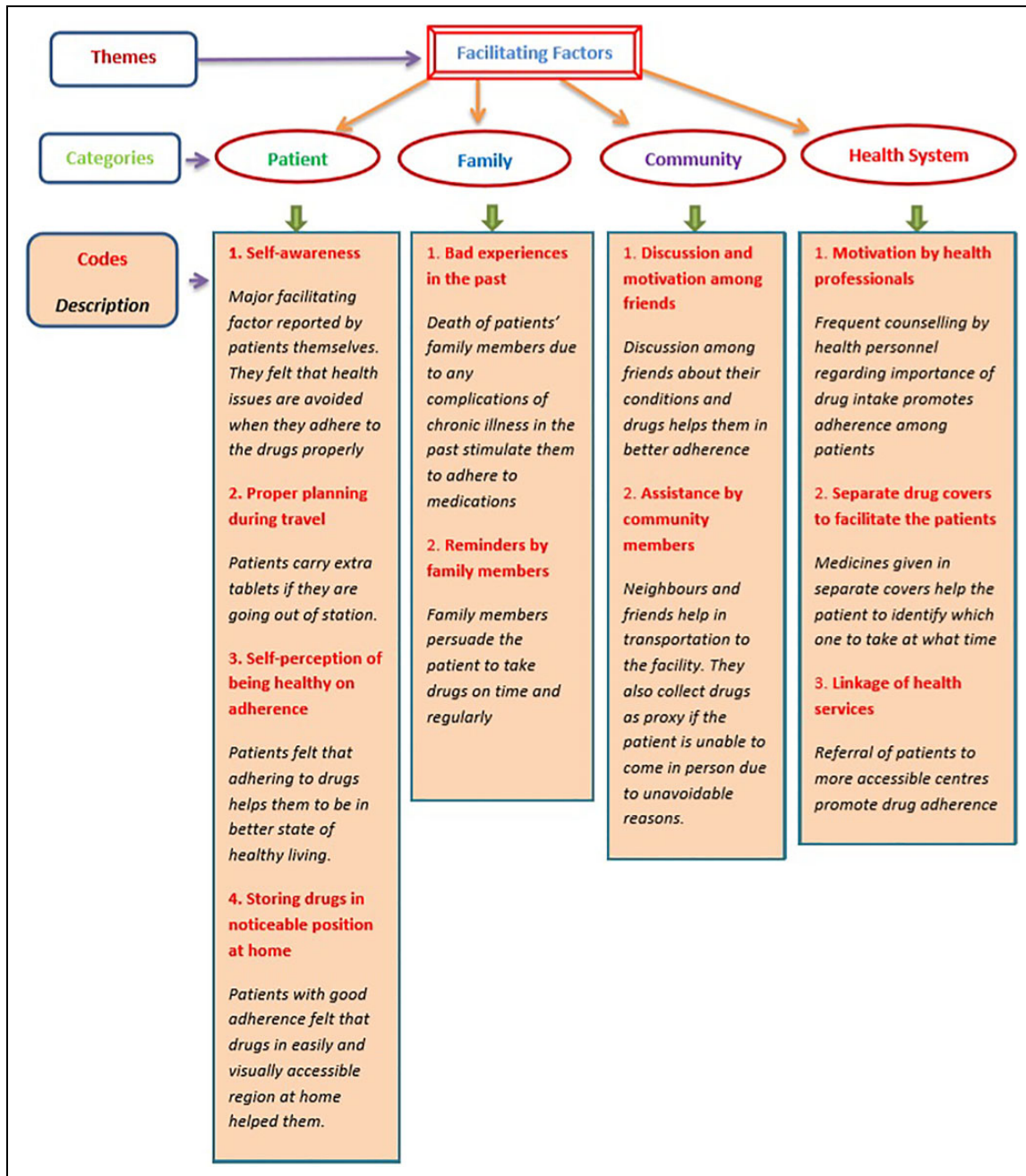


Figure 1. Facilitating factors influencing the drug adherence among noncommunicable disease patients.

Since patients can suffer from multiple comorbidities, each of the drugs can be provided in different colored covers which enable the patient to recognize the drug clearly. (FPD)

Patients should be asked to bring their spouse or parents or children at least once in 3 months, so that they will know the status of the patient and also the importance of drug intake, as family support plays an important role in patient's drug taking behavior. (MPD)

Discussion

This was a qualitative study consisting of in-depth interview conducted among NCD patients attending a primary health-

care center in rural Puducherry and key informant interview conducted among health professionals. The main objective of this study was to understand the barriers for low adherence and to explore the solutions in improving the drug intake level. In order to achieve this objective, interview was conducted to get the patient's perspective and health-care provider's perspective.

In the in-depth interview, major barriers for nonadherence to the medications reported were substance abuse, stress leading to forgetfulness, lack of family and community support, side effects of the drugs, lack of awareness about the complications, and overburdening of health facilities which

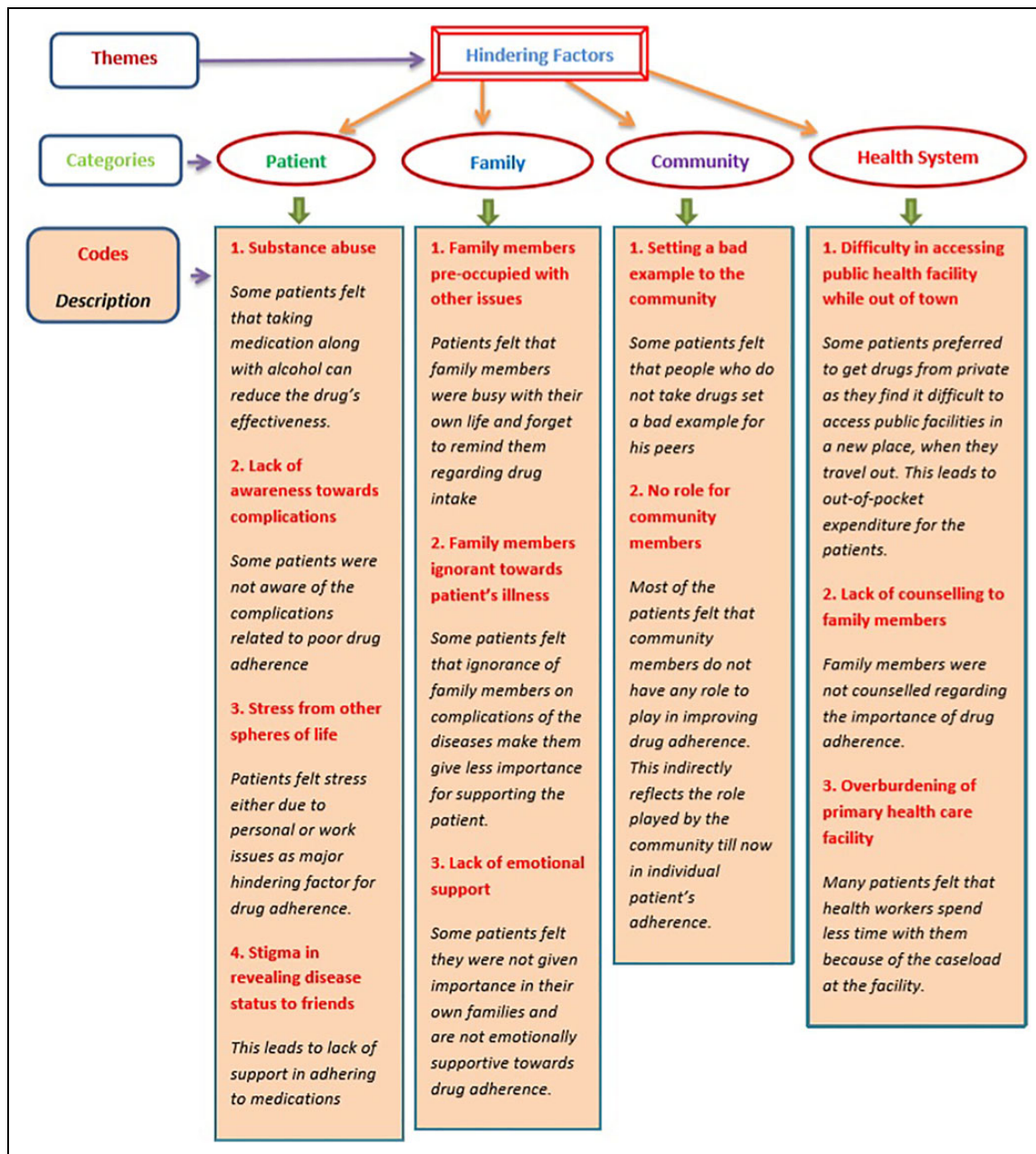


Figure 2. Hinderling factors influencing the drug adherence among noncommunicable disease patients.

makes the health professionals to spend lesser time with the patients. Although some of the barriers like forgetfulness and lack of family support were reported by similar qualitative studies in different settings (11,12), some of the new findings which emerged in the study were the influence of substance abuse and stress in impeding the drug adherence level. This finding shows the importance of mental health in improving the drug adherence level among NCD patients.

Facilitating factors were also asked among the patients who were highly adherent to medications. Findings in the corresponding interviews were self-perception of being healthy, proper planning during travel by carrying adequate amount of drugs to prevent missing of doses, and frequent

reminder by family members. These findings shows the importance of actions that need to be taken by patient themselves in order to be adherent to medications. Hence, all the patients need to be trained enough to carry out these facilitating factors effectively.

Interview regarding suggestions to improve drug adherence also found several important findings like formation of peer support groups, color coding of drugs, separate station for drug counseling, family members counseling, and involvement of AWW to ensure drug intake by patients during routine home visits. These solutions reported by health professionals in the current study were feasible and can be implemented at primary health-care level itself which caters

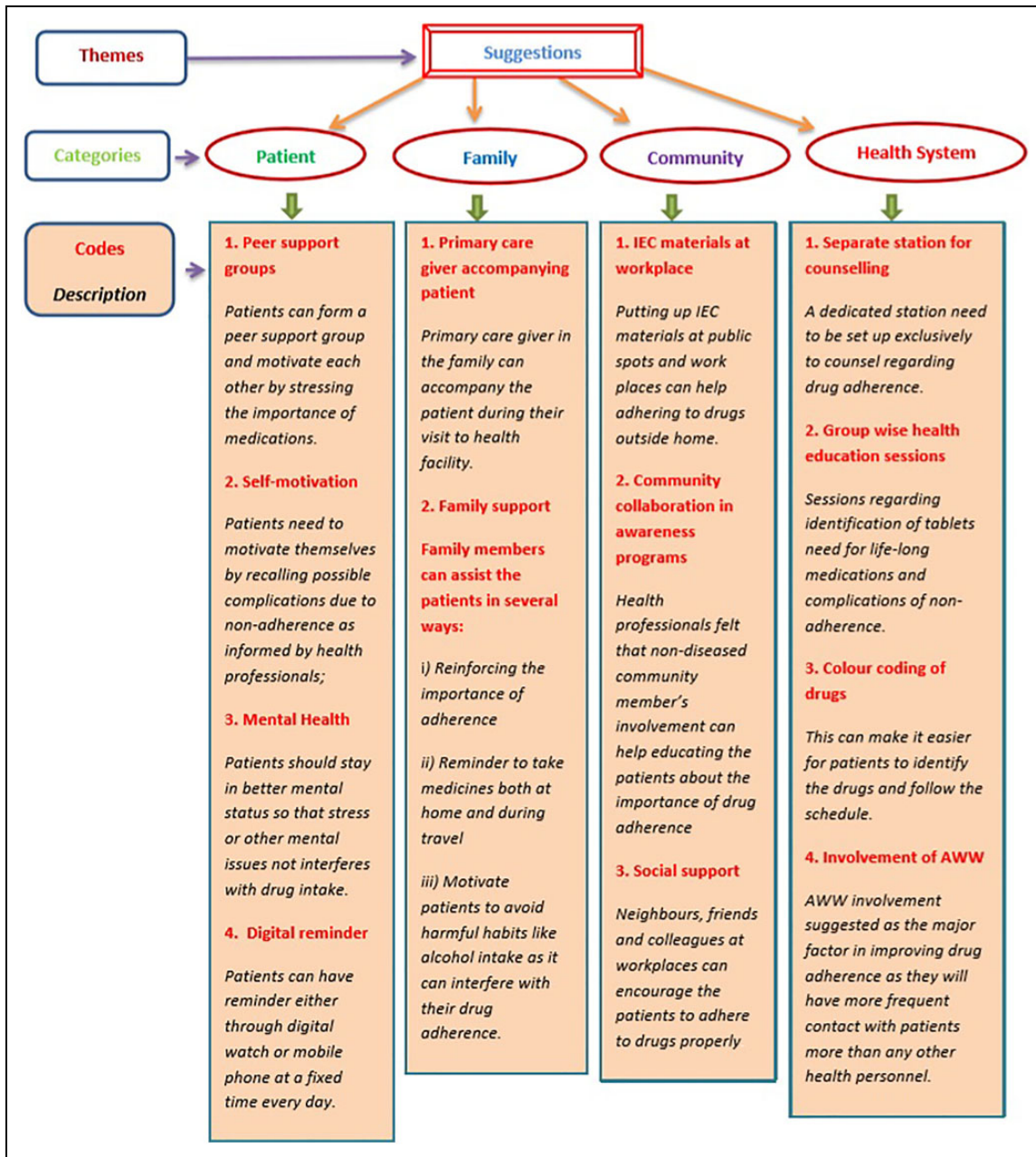


Figure 3. Suggestions/solutions to improve drug adherence among noncommunicable disease patients.

for large amount of population throughout the country. These findings also shows the importance of family support as those with better adherence and patients with poor adherence reported reminder from family members will be useful in improving their drug intake.

One of the major strength of study was the use of qualitative design which made exploration of barriers to nonadherence better. Our study also adds to the limited literature available for the exploration of barriers, facilitating factors, and suggestions for improving drug adherence among NCD patients, especially in South India.

However, the study had certain limitations. Study could have involved family members also for in-depth interview to

explore their perceptives. Current study is done as a single cross-sectional interview, and hence, causal relationship between nonadherence and factors associated cannot be determined, apart from the linkages which were stated directly by the respondents. Analysis was done iteratively to generate themes and codes for influencing factors and suggestions that emerged from qualitative interviews in order to examine potential processes and relationships. While most of the responses were recall based, bias might be possible for which triangulation of findings could have been done.

Good adherence to medications is important for achieving better control status for NCD patients, especially those suffering

from diabetes and hypertension. Improvement in drug intake should start from the patient level first. Patients need to be motivated enough to adhere to the drugs properly. However, family members and community members like friends and neighbors also play an important role as suggested by the findings in the current study. Hence, health education sessions targeting family and community members can be conducted to discuss regarding the NCDs in which one of the domain can be importance of adherence to medications.

Counseling for the patients can be given at least in groups if not possible to give individually because of high case load. However, further research need to be done by conducting interventional trial comparing the effectiveness of individual counseling and group counseling for improving the patient's drug adherence to see whether they are equally effective. Large-scale study involving multiple stakeholders and experts can be done to see what can be done at health system level to improve the drug adherence among NCD patients.

Conclusion

The current study reported that the major barriers for non-adherence to medications were stress, substance abuse, forgetfulness, lack of family support, and high case load of health facilities. Hence, as suggested by health professionals in the current study, corrective measures need to be started at patient level first by motivating and educating them regarding the importance of drug intake, and family-level and community-level measures like awareness campaigns in the community and health education sessions at the clinic can be conducted. All these activities need to be coordinated at the health system level in order to achieve high adherence level among all the NCD patients.

Declaration of Conflicting Interests

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