

Review Article

Regularity, treatment adherence and outcome among diabetic patients in primary care: an overview

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ABSTRACT

Early detection and compliance to prescribed treatment is the cornerstone to avert life threatening complications among those with non-communicable diseases (NCD). Assessing regularity of visits, adherence to medication and its correlates can help in devising effective strategies to improve medication adherence. The objective of the study was to review about regularity, treatment adherence and outcome among diabetic patients in primary care. In this literature review, electronic data sources viz. Pub Med, Proquest, Google Scholar, Research gate with the use of the keywords or Mesh words like “Diabetes,” “Primary Health care” “Treatment adherence” “Regularity of treatment” “process of care indicators” and “outcome indicators” were searched. The searches were limited to studies reported in English and were available as free full text from January 2009 to June 2018. Related articles including descriptive cross-sectional, cohort, randomized controlled trials, qualitative studies and systematic reviews were also extracted and refined further. From our review it’s clearly evident that the level of Diabetic care in terms of regularity and follow-up is suboptimal compared to standards established in developed nations. There is a wide scope for improvement in diabetic care as demonstrated successfully in many nations using regular clinical audit, which needs future introspection.

Keywords: Diabetes, Primary health care, Treatment adherence, Non communicable diseases

INTRODUCTION

Non Communicable Diseases contributes to 43% of worlds overall disease burden and are expected is expected to raise 60% and will be responsible for 73% of all deaths by 2020.¹ Diabetes along with hypertension can lead to life-threatening complications like cardiovascular diseases and stroke.² Globe has about 392 million people suffering from diabetes.³ This number is anticipated to rise to 592 million by the year 2035.³ About four-fifths live in Low and Middle Income Countries (LMIC). India is home for nearly 69.9 million people with diabetes mellitus, only next to China.³ International Diabetes Federation (IDF) estimates that diabetes accounts for 14.5% of all-cause mortality among people aged between 20 and 79 years.³ There is high healthcare spending to

treat diabetes and prevent its complications; estimated to be 673 billion USD and projected to increase by 20% in 2040.⁴ Global Burden of Diseases (GBD) rated hypertension which is a common co morbid condition with diabetes as the second important cause of mortality placed only next to under-five malnutrition in South Asia.⁶

India is facing the twofold burden of disease with soaring burden of communicable and non-communicable diseases.⁷ The load of diabetes has increased considerably over the last few decades.⁸ With increasing burden of the diseases and premature mortality associated with non-communicable disease like diabetes, National Program for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) was

launched.⁹ The program advocates delivery of care to the patients with NCD at the Primary Health Centres (PHCs), with timely referral to secondary and tertiary hospitals. Despite regular availability of drugs and laboratory investigations free of cost, the lack of adherence & irregularity in visits prevails among NCD patients. However, NPCDCS has not devised and implemented any standard operating procedures for assessing adherence or regularity to medication among NCD patients.

Irregularity in treatment and lack of adherence results into all-cause of hospitalization, mortality. The out of pocket expenditure among patients with non communicable diseases especially diabetes increases too.¹⁰

But, it is important to assess the reasons for irregularity and lack of adherence in the primary care as those patients are prone to develop complications. Identifying the patients and factors associated with irregularity and lack of adherence will help in developing targeted interventions in future among these patients to improve their regularity and limit the complications that may arise due to irregularity.

In this context, the present literature review is done to provide a description about regularity, treatment adherence and outcome about diabetic patient management in Primary health care.

METHODS

In this Literature review, electronic data sources viz. Pub Med and Google Scholar, were searched with use of the keywords “Diabetes,” “Primary Health care,” “Treatment adherence” “Regularity of treatment” “Structural indicators” “process of care indicators” and “outcome indicators”. The searches were limited to studies reported in English from January 2009 to May 2018 as the comprehensive care programme for NCD was implemented in India only in 2011. Articles available as free full text were selected for review. Approximately 100 related articles including descriptive cross-sectional, cohort, randomized controlled trials, qualitative studies and systematic reviews in varying numbers were extracted. Since only limited studies are available in India and for comparison with global standards International studies with similar objectives, methodology, study designs and other common grounds of comparability were taken into consideration and the limited number of articles was consolidated.

RESULTS

We are trying to explore the reasons under following headings

- Regularity of visits and adherence to medication among diabetes patients

- Blood sugar control among diabetes patients

Noncommunicable disease- diabetic care

NCD care process can be defined as what the health care provider did for the patient to improve his or her health status. Process involved in control of the NCD disease burden by identifying complications in early stage and how efficiently it was done. Care process is a series of inter-related activities undertaken to achieve objectives of treating a NCD patient. Process indicators are the measure of activities and tasks during patients’ health care visits

In addition to regularity of seeking treatment and adherence to treatment, performance of Blood sugar test, renal function test, lipid profile, ECG, Fundoscopy, foot examination and specialist consultation are the common process of care that can be assessed in a programme for diabetes patients

In this review, however, we are focusing on two main aspects of diabetic care process, that is, regularity of visits and adherence to treatment.

Regularity of visits and adherence to medication in diabetic care

The definition of the term “adherence” is “the extent to which a person’s behavior such as taking medication, following a diet and/or executing lifestyle changes corresponds with the agreed recommendations from a health care provider”.¹¹

Regularity of visits is based on the operational definitions adopted by various studies based on standard guidelines in their Health care system. In brief, it means that “how frequently they visit the Health center for their NCD care as per the recommended standard Guidelines”

Based on our observation, in India studies assessing adherence to medication among diabetes patients are mostly limited to patients attending tertiary care facilities.¹²⁻¹⁴ Though its appreciable it will be more ideal if done on primary care level.

A current study was conducted at a tertiary care hospital in South India among diabetic in-patients showed that only 49.3% were adherent to prescribed medications.¹² The study was conducted among diabetes in-patients who have got complications and are admitted to hospital but it would be ideal to conduct the study at the primary level before the onset of complications in the preventive aspect as mentioned earlier, thereby reducing the out of pocket and catastrophic expenditure. This is in accordance to recommendations of attaining universal Health coverage. A cross sectional study from Kerala showed 74% of diabetic patients to be less adherent to medication.¹⁵

As a co morbid condition when observed for level of Hypertension follow up the proportion of adherence were similar. The study from rural Tamil Nadu showed 75.9% of the hypertensive patients to be less adherent to medication yet another facility based cross-sectional study conducted in a public primary care clinic in China showed 32.6% of the hypertensive patients to have low adherence to medication.^{16,17} Strictly emphasizing the fact that comprehensive NCD care must be provided instead of just treating the current illness.

Two clinical audits conducted Puducherry and Vellore by Pruthi et al and Rahman et al showed Blood sugar monitoring was 44.9% and 97% respectively.^{18,19} As both were intervention based studies with proper training to health care providers on adherence to guidelines they showed Proportionately better results compared to other studies conducted in India. And also the above two studies were done on a smaller population when compared to other study population.

Similar study done by us involving secondary data conducted by us showed due to higher case load could also have resulted in incomplete documentation reflecting low proportion of regularity and adherence than actually what is being provided. This requires further introspection. It is a matter of concern that even those who were regular in attending the Health centers did not have their blood glucose monitored as per norms. Few reasons that could be attributed in health care provider's perspective are more case load, inadequate manpower, resources and training. From the patients perspective it may be due to their geographical location, accessibility – Modes of transport ,level of dependence i.e. the dependency ratio all these factors play a vital role especially in developing countries like India. An inventory analysis of the consumables and drugs and a study on the process of procurement would be valuable in identifying the reasons for the gaps in service.

Studies done in other nations show higher proportion of regularity and treatment adherence compared to Indian studies as shown in Table 1.

Table 1: Proportion of regularity and treatment adherence compared to Indian studies.

S.No	Study	Study group	Biochemical test	Frequency of testing	%
1	Mathias Ph Toh et al-2013 Singapore ²⁰	575 case records	HbA1c	Once in 6 months	83.0
2	Al-Khalidi et al -2014 Saudi Arabia ²¹	637 case records	Blood glucose	Not specified	82

Studies conducted in other nations, especially developed nations show relatively high level of regularity and adherence to the treatment due to various factors like health seeking behavior, awareness, health infrastructure etc. But one more striking feature from our observation was that there were regular clinical audits or interim assessment of the level of function in terms of manpower, process of care and treatment outcome as seen in above mentioned studies. Thereby if any gaps or lacunae are found in the treatment provided to the patients are rectified there by halting as reversing the progress of non communicable diseases which is in accordance Global Action Plan for the prevention and control of NCDs 2013-2020 announced by WHO in UN summit.²²

Blood sugar control among diabetes patients

Outcomes are status of health or events that follow care provided from the health facilities like Ideal control of

diabetes. Outcomes help to measure the efficiency of a health care process. An ideal outcome indicator is specific, measurable and would capture the effect of care processes on the health and well being of the patients.

Important outcome indicators assessed for diabetes patients are ideal fasting blood sugar, random blood sugar, BP control, HbA1c, cholesterol control and normal renal parameters. Diabetic patients with controlled/satisfactory blood sugar status must have blood sugar levels within the optimal range of FBS \leq 126 mg/dl and/or PPBS/ RBS \leq 200 mg/dl as recommended by NPCDCS guidelines.

Studies done in other nations show better proportion of treatment outcome compared to Indian studies as shown in Table 2.

Table 2: Proportion of diabetic treatment outcomes compared to Indian studies.

S.No	Study	Study group	Biochemical test and Ideal control status recommended	%
1	Gabert et al India ²³	7181 patients	RBG <200 mg/dl	60
2	Mathias Ph Toh et al- Singapore ²⁰	575 case records	HbA1c <7.0%,	51.2
3	Al-Khalidi et al Saudi Arabia ²¹	637 case records	FBS<126 mg/dl	30
4	Pruthi et al Puducherry ¹⁸	336 audit of records	FBS(80-110) and PPBS (120-140)	22.9

Different parameters were used to ascertain the ideal outcome status of diabetic individuals based on their own nation's standards like RBS, HbA1c etc. However, Studies conducted in other nations, especially developed nations show relatively high level of ideal treatment outcomes similar to regularity due to various factors as mentioned.

DISCUSSION

Currently India is spending about 2.3% of its GDP in Health care which in comparison to other Developed Nation is suboptimal, which needs to be improved in accordance the global disease burden and transition.

“Build capacity at various levels of health care for prevention, diagnosis and treatment of common Non communicable diseases (NCD)” have been achieved tremendously after the implementation of NPCDCS programme, however the lacunae's exists in the Process of care eventually leading to suboptimal treatment outcome.

The regularity of patient visits, periodic monitoring for life threatening complications and control of blood sugar are sub-optimal among the NCD patients treated in Health facilities which need to be addressed. Proper training to health care providers on adherence to guidelines they showed proportionately better Treatment outcome.

Regular adequate training needs to be provided to all level of health care providers more frequently as diabetes management change more frequently unless prompt updates are made the treatment outcome won't be fruitful

Cumbersome way of documentation must be rectified, the method of online registry which captures the patient details and information during each follow-up of patient visit can be implemented and this will led to improvement of documentation and shift the focus to on other NCD activities thereby achieving good quality of care in the management of NCD patients.

Clear lack of job responsibility especially decision making in changeling treatment regimen, lab investigations and their documentation exists among the health care providers which needs to be rectified.

Local health system planners and managers need to prioritise the care for diabetes, hypertension and other non communicable diseases in a similar level provided to that of antenatal care and immunization as there is an impending global transition and the burden of Non communicable disease is expected to rise even more as stated by WHO. The Epidemiological transition ratio in India since 1990 is less than one is various states clearly showing the picture that the disease burden due to Non communicable disease is clearly out running the burden

contributed by Maternal and child care illness, hence shift in the priority is the Need of the Hour.

CONCLUSION

Though as per constitution health is responsibility of the state there must be uniformity in treatment protocol as implemented in the form of NPCDCS. From our review it's clearly evident that the level of Diabetic care in terms of regularity and follow-up is suboptimal compared to standards established in developed nations. There are wide scopes of improvement successfully demonstrated in many nations in the form regular clinical audit which needs future introspection.

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