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Knowledge, practice, and barriers in laboratory test follow-up among diabetic population in Medchal district, Telangana: A cross-sectional study

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Abstract

Background: This study was conducted in a known diabetic cohort in Southern India to assess the knowledge, practice, and barriers related to the routine laboratory tests required as a part of diabetes management, and the socio-demographic risk of non-uptake of selected routine laboratory tests.

Methods: A cross-sectional study was conducted with 145 randomly selected participants. This study was conducted to assess the knowledge, practice and barriers in laboratory test follow-up among the diabetic population in the Medchal district. Simple random sampling was done. A structured questionnaire was used to collect data after obtaining informed consent. Data analysis was done using MS-Excel.

Results: It showed that knowledge and practice regarding the tests varied between 29 and 40%. It was also found that 55.9% (95% CI: 47.4 to 64.1%) populations did not do any of the selected tests. Younger age (< 50 years) (aOR: 2.6; 95% CI: 1.3 to 5.5) and lack of formal education (aOR: 2.8; 95% CI: 1.2 to 6.3) were major risk factors for non-uptake of laboratory tests. Insufficient knowledge (75.8%) and inadequate care perception (20%) were the primary perceived barriers.

Conclusion: Significant knowledge and practice gaps regarding routine laboratory tests exist among diabetic patients, particularly young and educationally disadvantaged populations. These gaps necessitate health system strategies to empower patients with adequate knowledge and address systemic barriers for optimal diabetes management.

Keywords: Telangana, Medchal, diabetes management, knowledge, practice, barriers

Introduction

With the recent global upsurge of diabetes, it is expected that the morbidity and mortality of the condition will increase substantially across the globe, including the low- and middle-income countries ^[1]. Micro- and macro-vascular complications are the main underlying causes behind the morbidity and mortality in diabetes ^[2]. It is well-known that glycaemic control is the mainstay of diabetes management and to prevent the long-term consequences ^[3]. Therefore, it is important to empower people with diabetes and the health system to understand such complications and incorporate the clinical and laboratory tests in the treatment plan for early detection and management of the complications ^[4].

In India, the awareness about the disease, treatment plan, and goals of the treatment is significantly poor among the lower socio-economic populations ^[5]. Besides, with the lack of diagnostic facilities and quality care, especially in the rural settings, the quality of diabetes care is expected to be compromised, but the extent is largely unmeasured ^[6, 7]. In this context, the present study was conducted in a known diabetic cohort in Southern India to assess the knowledge, practice, and barriers related to the routine laboratory tests required as a part of diabetes management, and the socio-demographic risk of non-uptake of selected routine laboratory tests.

Methodology

- **Study design and setting:** A community-based cross-sectional study was carried in a diabetic cohort in Telangana state, India. The population structure of the cohort has been described earlier ^[11].

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There were 350 adult (> 20 years) diabetic patients in the cohort. A computer-generated simple random sampling was done to recruit the participants. With a finite population of 350, assuming 7.5% absolute precision and a prevalence of 50%, the sample size was calculated to be 115.

- **Duration of study:** The study was conducted between April 2023 and July 2023.

Eligibility criteria

Adult male and female aged 20 years and above who are diagnosed with diabetes will be eligible to take part in the study. These population will be selected from the cohort of an earlier conducted study, namely TETRA project done by SHARE-India and MediCiti institute of medical sciences in the district.

Inclusion criteria

People who are staying in Medchal districts and are willing to participate in a study and diagnosed with diabetes.

Statistical method

Data was collected in the local language encompassing demographic variables, questions on knowledge, practice, and barriers related to laboratory test follow-up. A list of selected routine laboratory tests was identified from the national guidelines by the Indian Council of Medical Research (ICMR) including-serum protein, serum creatinine, serum cholesterol, and urine microalbumin. Participants were asked if they have heard about these tests (Knowledge) and the recent laboratory reports were verified (practice) by the investigators. Descriptive statistics were done in Microsoft Excel®. Univariate analysis, followed by multivariate logistic regression was done to estimate the risk as adjusted odds ratio (aOR) with 95% confidence interval (CI). Factors with a p-value < 0.2 was considered in the final model and a p-value < 0.05 was considered as significant. The institutional ethics committee clearance was obtained prior to the study and informed consent was obtained from all the participants.

Ethical consideration

Ethical approval was taken form taken from institute under the number IIPH/TRCIEC/345/2023

Ethical Participants personal information kept private. No one is personally identified and Participants may leave the study at any time. The participant received an information sheet. A consent was obtained before the study.

Results

We recruited 145 participants in the study. The mean age of the participants was 50 years [SD 7.6 years]. The majority were males [N=79, 54.5%], Hindu by religion [N=125, 86.2%] had no formal schooling [N=57, 39.3%], currently married [N=123, 84, 8%] and were gainfully employed [N=99, 69.2%]. The median duration of diabetes in this population was 6 years [IQR: 3 to 10 years]. All of them were under medical management of diabetes.

Knowledge about the selected tests ranged between as low as 29% for serum creatinine and as high as 40% for serum protein (Table 1). It was evident that only a similar proportion of populations went for conducting these tests. None of the tests were performed by 81 [55.9%; 95% CI: 47.4 to 64.1%] participants. The risk was highest for the

young age-group [< 50 years] populations [aOR: 2.6; 95% CI: 1.3 to 5.5], and for those with no formal education [aOR: 2.8; 95% CI: 1.2 to 6.3], (Table 2).

Ninety-five [65.5%] participants have expressed that at least one challenge exists to conduct the laboratory tests. The major challenge was insufficient knowledge [N=72, 75.8%] about the test that they should perform [Figure 1]. The other challenges were belief that the care was adequate and so laboratory tests not required [N=19, 20%], and lack of trust in healthcare [N=7, 7.4%].

Discussion

The present study uncovered significant gaps in knowledge and practice regarding routine laboratory tests among diabetic patients in south India, highlighting a critical aspect of diabetes management. Despite medical management, more than half of the participants failed to undergo essential laboratory tests. The study also observed that only those populations who are aware of the laboratory tests, are adherent to the laboratory tests. These findings also emphasizes that poor socio-economic group and young diabetic populations are at significant risk of poor laboratory test adherence.

Lack of diabetes diagnosis itself is major challenge in India.^[7] On top of that, a major proportion of the diabetic populations lacks awareness on the follow-up requirement in terms of medication adherence, laboratory tests, and self-care practices or regarding the complications^[8, 9]. We found that roughly three-fifths of the populations are unaware about the tests. It indicates that health system has lacunae in empowering populations regarding the necessity of the follow-up care. Earlier studies indicated that infrastructural lacunae, limited time and knowledge of the physicians are often the major hurdles in follow-up of these populations and in achieving the treatment goals^[7].

Low socio-economic status has traditionally been the biggest challenge in diabetic care as we found in our study as well^[5]. Fortunately, in the state where the study has been conducted, the populations are largely covered by the 'Telangana Diagnostics', a user free services provided by the government of Telangana to reduce out-of-pocket expenditure^[10]. Hence, the requirement at this stage is to empowering populations with adequate knowledge and thereby ensuring an optimum care pathway by the health system. Besides, it is responsibility of the healthcare system to motivate populations who have perceived barriers like distrust with the health system or reportedly lacks time to comply with the laboratory tests.

Conclusion

Significant knowledge and practice gaps exist regarding routine laboratory tests among diabetic patients in this region, particularly among young and educationally disadvantaged populations. Health system should identify strategies to empower patients with adequate knowledge and address systemic barriers to ensure optimal diabetes management should. Leveraging existing initiatives like Telangana Diagnostics, healthcare systems must prioritize patient education, awareness, and motivation to improve laboratory test adherence and ultimately reduce the burden of diabetes complications. By addressing these gaps, we can bridge the existing healthcare lacunae and promote comprehensive diabetes care in resource-constrained settings.

Figures and Table

Table 1: Knowledge and practice about laboratory test follow-up (N=143).

Variables	Knowledge frequency (%)	Practice frequency (%)
Serum protein	58 (40)	57 (39.3)
Serum creatinine	42 (29)	42 (29)
Serum cholesterol	52(35.9)	52 (35.9)
Serum triglycerides	53 (36.6)	53 (36.6)
Urine microalbumin	57 (39.3)	56 (38.6)

Table 2: Socio-demographic non-uptake risk of tests of laboratory tests

Variables		Test not done	OR (Univariate)	aOR (95% CI)
Age	<50 years (N=63)	43 (68.3)	2.5 (1.3 to 4.9)	2.6 (1.3 to 5.5)
	>=50 years (N=82)	38 (46.3)		
Gender	Male (N=79)	43 (54.4)	0.9 (0.5 to 1.7)	-
	Female (N=66)	38 (57.6)		
Religion	Hindu (N=125)	59 (55.2)	0.8 (0.3 to 2.1)	-
	Other (N=20)	12 (60)		
Formal education	Absent (N=57)	36 (63.2)	1.6 (0.8 to 3.2)	2.8 (1.2 to 6.3)
	Present (N=88)	45 (51.1)		
Marital status	Currently not married (N=22)	14 (63.6)	1.5 (0.6 to 3.7)	-
	Currently married (N=123)	67 (54.5)		
Gainful employment	Yes (N=99)	60 (60.6)	1.8 (0.9 to 3.7)	2.2 (1.0 to 5.0)
	No (N=46)	21 (45.7)		

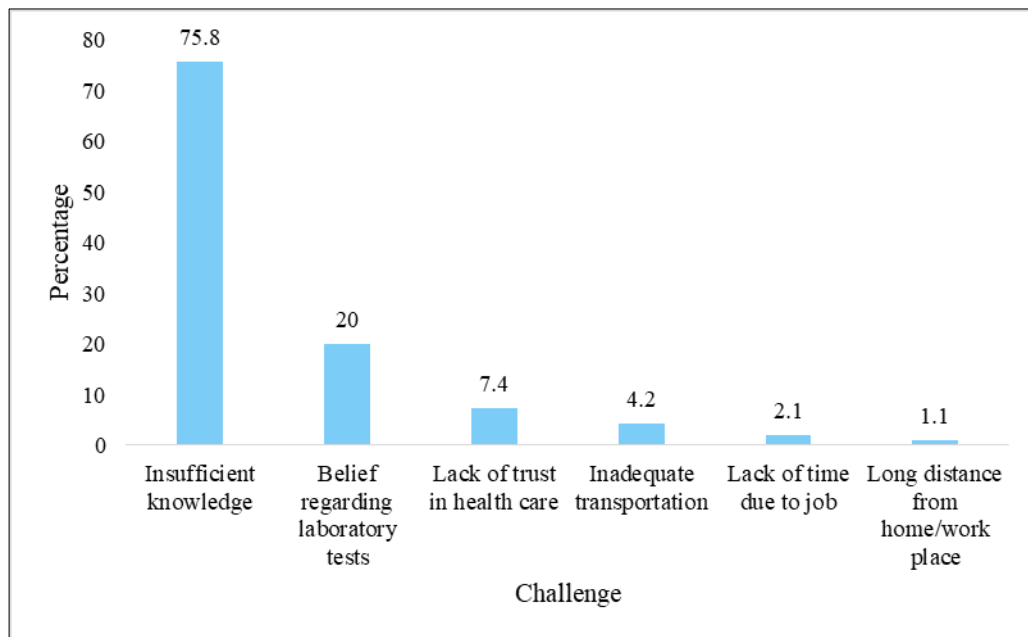


Fig 1: Personal level barriers to laboratory test follow-up

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Contribution

- Dr. Suruchi Prakash author and contributed in concept, design, intellectual content, literature search, data analysis and statistical analysis, manuscript preparation.
- Dr. Sirshendu contributed in concept design, intellectual content, manuscript editing and manuscript review.

- Varun Agiwal contributed in data acquisition, data analysis and statistical analysis.
- Shailendra Dandge contributed in concept and design.
- Neela Amodini contributed in literature search and manuscript preparation.

Conflict of interest

Not available

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References

1. Ong KL, Stafford LK, McLaughlin SA, Boyko EJ, Vollset SE, Smith AE, *et al.* Global, regional, and national burden of diabetes from 1990 to 2021, with

- projections of prevalence to 2050: a systematic analysis for the Global Burden of Disease Study 2021. *Lancet*. 2023 Jul 15;402(10397):203-234.
2. Fowler MJ. Microvascular and macrovascular complications of diabetes. *Clin Diabetes*. 2008 Apr 1;26(2):77-82.
 3. Crasto W, Patel V, Davies MJ, Khunti K. Prevention of microvascular complications of diabetes. *Endocrinol Metab Clin North Am*. 2021 Sep 1;50(3):431-455.
 4. Velasco GDV, Valdes AP, Martagón AJ, Ramírez GGA, Salinas ACA. Empowerment of patients with type 2 diabetes: Current perspectives. *Diabetes Metab Syndr Obes*. 2019 Aug 6;12:1311-20.
 5. Maiti S, Akhtar S, Upadhyay AK, Mohanty SK. Socioeconomic inequality in awareness, treatment and control of diabetes among adults in India: evidence from National Family Health Survey of India (NFHS), 2019-2021. *Sci. Rep*. 2023 Feb 20;13:2971.
 6. Das AK, Saboo B, Maheshwari A, Nair VM, Banerjee S, CJ, *et al*. Health care delivery model in India with relevance to diabetes care. *Heliyon*. 2022 Oct 1;8(10):e10904.
 7. Muralidharan S. Diabetes and current Indian scenario: a narrative review. *J Diabetol*. 2024 Mar;15(1):12-9.
 8. Hussain R, Rajesh B, Giridhar A, Gopalakrishnan M, Sadasivan S, James J, *et al*. Knowledge and awareness about diabetes mellitus and diabetic retinopathy in suburban population of a South Indian state and its practice among the patients with diabetes mellitus: A population-based study. *Indian J Ophthalmol*. 2016 Apr;64(4):272-276.
 9. Chittooru CS, Ananda KG, Panati DD, Chaudhuri S, Prahalad H. Self-care practices and its determinants among diabetic population in rural Andhra Pradesh, India: a cross-sectional study. *Clin Epidemiol Glob Health*. 2022 Jul 1;16:101103. Available from: [https://cegh.net/article/S2213-3984\(22\)00144-0/fulltext](https://cegh.net/article/S2213-3984(22)00144-0/fulltext)
 10. Department of Health, Medical & Family Welfare, Government of Telangana. Telangana diagnostics [Internet], [Cited 2024 Oct 27]. Available from: <https://tdiagnostics.telangana.gov.in/AboutUs.aspx>
 11. Dandge S, Jeemon P, Reddy PS. Technology-enabled non-physician health workers extending telemedicine to rural homes to control hypertension and diabetes (TETRA): A pre-post demonstration project in Telangana, India. *PLOS One*. 2019;14(2):e0211551. DOI: 10.1371/journal.pone.0211551

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