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# Living with Diabetes type 2: mapping the actors and their interactions in geriatric population

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**Abstract**

Diabetes mellitus type 2 is increasingly coming across as one of the fastest growing disease that is multi-systemic in nature and affects the quality of life and independent living .It is more so in the geriatric population .The present study attempts to map the journey in geriatric population(>=65yrs) living with Diabetes mellitus type 2. It aims to identify the actors, both human and non-human that acts as facilitator or barrier at various touch points and maps the relation and interaction between them ,in context of independent ,sustainable living by the geriatric people with Diabetes Mellitus type 2 .

**Keywords:** Diabetes mellitus type 2, geriatric population, activities of daily living, mapping.

## Introduction

Diabetes in geriatric people (>65yrs of age) is increasingly coming up as a matter of public health concern. This is owing to the fact that, geriatric population caters to the more perceptibly growing section of the diabetes population in the recent past and continuing to do so [1,2] .Studies have claimed that 33% of the geriatric age group in U.S , have diabetes of whom nearly half remain undiagnosed. [3,4]. Similar scenario has been observed in India in a 2013 study, with 30.42% of the elderly population suffering from Diabetes mellitus type 2 , with no obvious gender skewing [5] . The older age-groups also records higher incidence rates of macrovascular complications of Diabetes like acute myocardial infarction, strokes, peripheral vascular disease, end-stage renal disease,etc [6,7]. The risk of all-cause, cardiovascular, and cancer mortality appeared to increase significantly among older adults with diabetes and an $HbA_{1c}$ >8.0% [8]. In conjunct to all these, the older adults often undergo a progressive decline in their strength,range of motion, mobility and ability to carry out activities of daily living(ADL) [9] that may vary from person to person. This may be attributed not only to the decreasing physical abilities but also to the diminished cognitive function and need to cope with the changes in their social environment that may stem from the irreversible changes in their immediate surrounding or temporary ones that may subject them to compromise with independent living on their own. Eventually, the elderly living with Diabetes have these macrovascular and microvascular complications set against the backdrop of increased prevalence of geriatric giants encompassing functional disability, falls, depression, dementia and incontinence, making it a complex

dynamic[10,11]. They have been found to be susceptible to increased hospitalizations and associated morbidity and mortality [12].

This heterogenous spectrum prompted the American Diabetes Association (ADA) to come out with a consensus report stressing the importance of setting individualized goals of care for elderly with diabetes in February 2012 [13]. Every elderly living with Diabetes has to go through a period of unlearning previous skills and relearning newer skills in a bid to adopt to the newer challenges thrown at him/her lifestyle.

It is imperative to look into this complex scenario in a more wider spectrum of events that are interspersed with various actors , both human and non-human who interact with the Central actor (elderly with Diabetes) at various touch-points along the time axis .These actors are taken as any person, tangible product or service that influences the health outcome. This interplay is again subject to variable outcome given the differing functional status of the learning domains of the elderly in question. The present study looks into this interplay of various actors that directly or indirectly plays a role in the healing process ,going beyond the generally perceived health care scenario of an elderly living with Diabetes type 2. The journey has been mapped from the perspective of the patient concerned, who is often ridden with co-morbidities and compromised functional status, to gain insight in the interaction, facilitation and impedence on the way that often go unnoticed . This would enable the health care providers to develop deeper understanding of the complex dynamic of a geriatric person and ensure better health outcome and sustainable living for them [13].

**Material and methods**

The present study was a cross-sectional, observational one, undertaken among 100 elderly living with Diabetes attending the Diabetes clinic at a private hospital in eastern India over a year of study period.The study population comprised of elderly(>65yrs of age) living with Diabetes for >=1 year(n=100) and their accompanying persons (n=88) attending the clinic .Necessary institutional ethical clearance and informed consent from the study subjects were taken. The functional status of different learning domains of the elderly with Diabetes were assessed using Activities of daily living (ADLs), comprising the fundamental skills needed to manage self care, dressing, toileting/continence, transferring/ambulating, and eating as well as the Instrumental Activities of Daily Living (IADLs), which encompass complex activities related to independent living in the community (e.g., managing finances, medications, etc). IADL performance is sensitive to early cognitive decline. Besides in-depth interview was conducted along with to identify the actors, who were presumed as everyone and everything that can actively contribute to the healing process of the geriatric person with diabetes. With the respondents instead of questioning mode, exchange mode was adopted whereby they were respected as the expert on their own situation. The changes over time were probed, eliciting what they could do, what they can, what they are actually doing and how all these have evolved in the recent past. They were asked to categories the actors, both human and non-human ones, at different point of time in their life with the help of mapping in concentric circles and placing them in the nearer or further rings of concentric circles based on their relative importance as perceived by them with respect to their health care decision making. Based on the findings ,the interaction between the actors were mapped with respect to the elderly living with Diabetes type 2 and the complex

interdependence between the patient and various actors and between actors themselves were mapped out.

**Result and Discussion**

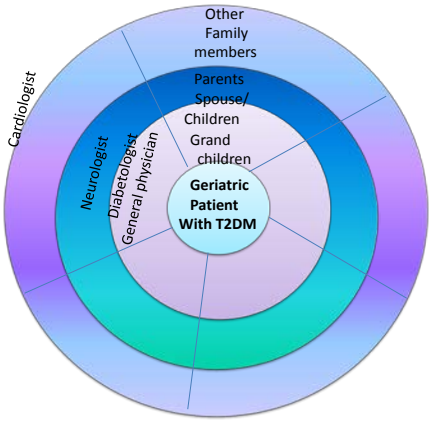
The study population comprised of 100 elderly people (>=65yrs)with history of Diabetes Mellitus type 2 for at least a year and more.Of them 44% were women and rest were male .Nearly half of them (51%) were living with Diabetes type 2 for 10 or more years. 88% of the study subjects were accompanied by family members , with 78.4% being their children(son/daughter).The geriatric people with diabetes were assessed for Activities of daily living ( ADLs), the total score ranges being 0 to 6, and from 0 to 8 for Instrumental activities of daily living(IADLs) and geriatric depression scale(GDS) with (0-5) being normal and more than 5 as suffering from depression, to assess their functional status with respect to their duration of diabetes since diagnosis.

Table 1: Distribution of the scores of ADL and IADL of geriatric people with diabetes and their duration of diabetes type 2 since diagnosis.

| years | ADL 4-6 | ADL 0-3 | IADL 0-4 | IADL 5-8 | GDS 0-5 | GDS >5 | Total |
|---|---|---|---|---|---|---|---|
| <5 | 4 | 17 | 5 | 16 | 20 | 1 | 21 |
| >=5<10 | 5 | 23 | 6 | 22 | 26 | 2 | 28 |
| >=10<15 | 9 | 15 | 10 | 14 | 22 | 2 | 24 |
| >=15<20 | 8 | 8 | 10 | 6 | 9 | 7 | 16 |
| >20 | 7 | 4 | 9 | 2 | 6 | 5 | 11 |
| total | 33 | 67 | 40 | 60 | 83 | 17 | 100 |

While assessing the functional status of the study population , it was found that 33% had compromised independent living with need for physical assistance with 63.3% of those living with Diabetes for more than 20 years needing so.In the cognitive assessment through IADL scores , 40% having lowered function and being dependent and was found to be of increasing proportion depending upon the duration of Diabetes since diagnosis.17% was found to be having mild to moderate depression causing changes in their affective domain with nearly half of those living with Diabetes for 15 years or beyond.

Fig 1: Concentric circle diagram mapping the human actors in living with T2DM in Geriatric population




The majorly identified human actors as stated by the Elderly while carrying out the in-depth interviews and mapped by them , are placed in concentric grids around the patient in context of the perceived importance of that actor in their healing process and enabling independent living. The actors closer to the patient , in the inner rings are interpreted as more relevant in the patient journey and those in the outer circle are

perceived as less relevant. Here the human actors are grouped in order to categories the actors as per their field of contribution. Initially most restricted the main actors in the path of achieving glycemic control as the Dialectologist and the general physician. As in-depth exchange was undertaken a more vivid picture emerged that was vast departure from the earlier picture.

It was found that of their family they had greater facilitation and longer interaction time from their grandchildren. They were followed by their children who were also identified in 11% cases as barriers with the respondent considering themselves as burden and did not get necessary financial, physical or emotional support needed. From the Health care providers, the general physician, who often (44%) was identified as the first point of contact belonged to the core group of facilitators along with Diabetologist (32%).The Diabetes educator was found to have an important role with several of them (53%) having accessed that touch point expressed better understanding of the health care needed and were able to tide over points of decision making in the healing process of ensuring better glycemic control. Though the Dietician too had an important role as per them, yet 39% were not following the dietary advices as they could not perceive desired outcome and the dietary restrictions enforced was not to their like as the changes did not conform to their current lifestyle .The Elderly with diminished motor power and those with diabetic neuropathy were found to be interacting with the physiotherapist but they often discontinued their services as they perceived it as an added financial burden in the already escalating treatment cost in the journey of cure and care.Nearly half of those(51%) accessing this touchpoint were not following it up on long term with the alternative of self therapy by carrying out the exercises demonstrated .

The Counselor was perceived as one of the least important actors with counselling associated with mental health impairment and most (63%) regarded it as unnecessary in the treatment path.although 8% had complaints of foot problems , only 24% of them accessed the Podiatrist . The major reason mentioned was the lack of availability of podiatrist locally and also the needless consultation from their point of view .

Regarding their social touch points, those who were known to them and living with Diabetes had greater impact at times than their health care providers with 11% stopping adherence to medicine/Insulin regime based on their recommendation. Peers, colleagues and neighbours were also identified as actors in the journey but of relatively less importance. The house help were often (31%) found as direct support system for ensuring mobility and other functions.

Fig. 2A and 2B Visual mapping of the human actors in the journey of Elderly living with Diabetes type 2 and their interdependencies along the way initially and after in-depth exchange.

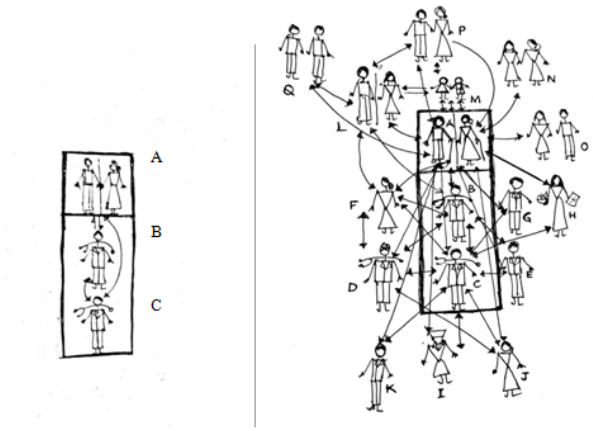


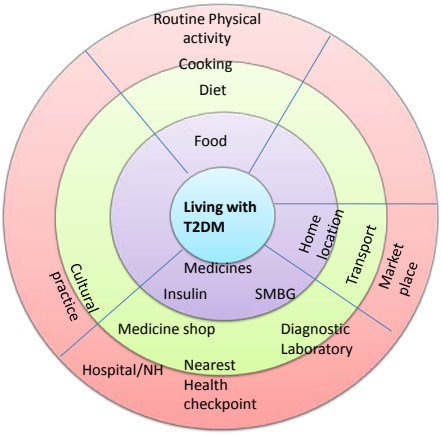

Fig. 2A: Initially identified Actors, Fig 2B: Finally identified Actors and their interaction

A: Elderly male/ Female living with Diabetes type; 2 B: General Physician; C: Diabetologist D: Neurologist; E: Cardiologist F:Diabetes Educator; G: Physiotherapist ;H:Dietician; I:Nurse; J: Counselor

K: Podiatrist; L: Children; M: Grandchildren; O: Peer; N: Neighbours; P: Other family members

A very interesting departure from the originally identified actors was found at the end of the exchange, with complex interplay with the patient as well as between the actors themselves were noted which largely remains unrealized and these are touch points that needs to be explored and stressed upon while addressing the needs of these persons living with Diabetes.

Fig 3: Concentric circle Diagram Mapping the Non-Human actors in the journey of Elderly living with Diabetes.



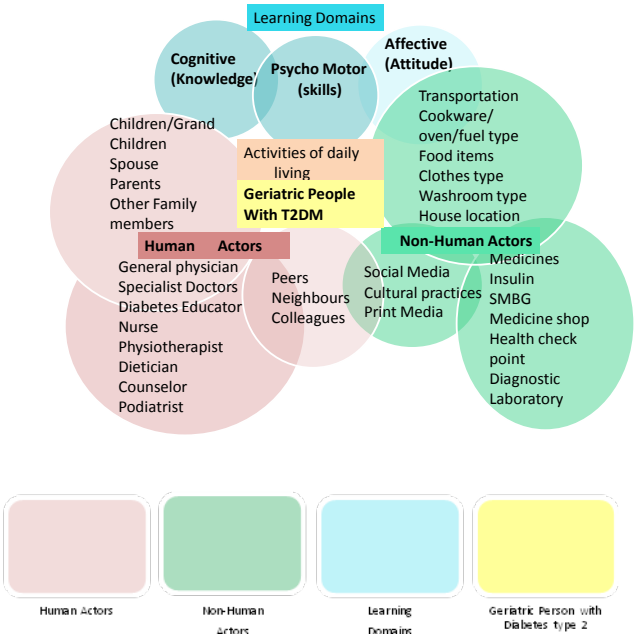

The non human factors identified as facilitators or barriers in the journey were mapped in the concentric rings as before as per their perceived relevance in this path of attaining independent living with Diabetes in Geriatric population. The availability of medicines as per prescription and then the Insulin and self administering of it with the help of Insulin syringes or pens were one of the most important factors identified. They were mostly aware of the problems of hypoglycemia with 42% having experience at different points of time in their journey .SMBG(Self Monitoring of Blood Glucose) seemed to evoke a sense of fear in 28% of the respondents and most of them failed to realise the implication of SMBG in attaining glycemic control and optimum HbA1C levels. Those who were asked to carry out the five point programme of SMBG , only 38% had successfully done that and the rest failed to adhere either due to inertia to carry it out or having cognition errors in imitating the act shown to them by the Diabetes educator. Nearness of medicine shop, diagnostic laboratory, health check points and hospitals were identified as next important actors in the health care category in the mentioned order. Ability to use the phone and dial numbers and access to different social media like the television, radio, etc. The print media also had an impact in their way of perception of the journey but most of them considered it has diminished in the recent past. Though not direct but a perceptible role of cultural practices of religious fasting and dietary practices were observed in many.

Although nearly 72% realised the importance of taking the right kind of food and adhering to the diet while confessing they were often tempted to go beyond these .The elderly females mostly continued with their cooking and identified poor physical energy and compromised cognition and attitude as the barriers than the heavy cookware or complexity of recipes. The positive impact of physical exercises were largely ignored and 68% cited lack of energy and motivation to do so.In ensuring mobility the location of their home , accessibility of transport facilities and distance of the nearest market to enable independent shopping were cited as important actors in the order mentioned.

Nearly a third of them (32%) mentioned a deterring point with their type of wash room used and the clothes worn as they realised that they were unable to continue with the previous modes in them as before with increasing passage of time and 11% had a change in

attire and 7% changed the washroom type used as squatting had become a major issue with them.

Fig 4: Assessing the interaction of human and Non-human actors in living with T2DM in Geriatric population in context of generic challenges of independent living.




An interesting picture of overlapping domains emerged as a holistic view of the interaction of the actors both human and non-human were mapped in the backdrop of compromised functional status of the central actor that is the Elderly living with Diabetes type 2 and opens up a new arena of focus for those delivering health care at various points over the time axis in the patient journey and need to address these issues.One of the recently conducted Australian study found that many Australian Adults with Type 2 Diabetes do not adhere to the Diabetes self management education imparted to them and identified four levels of interaction points at the individual level,interpersonal level ,organisational and community levels [15] . While concluding about the treatment of type 2 Diabetes in elderly ,the functional capacity of the individual, comorbid diseases and treatment compliance should be evaluated together according to several studies and less aggressive management with glycemic control with more conservative goals regarding HbA1c is suggested alon with individualized goals of care [16,17, 18] .

**Conclusion**

Identifying the actors both human and non-human and their interplay, proves to be a powerful tool in navigating the various touch points some of which acts as facilitators and some as barriers in the journey of achieving the health care goal of living successfully with Diabetes in geriatric age group that is vulnerable from the various compromises in the different domains of life viz. Social, economic, physical, functional and psychological. Understanding the complex layers of this age group that suffers from multi systemic involvements and polypharmacy being the order of the day, has great implications in ensuring adherent, healthy, successful ageing with Diabetes. This can embark the elderly living with Diabetes type 2 on a guided journey as they embrace Diabetes self management education at the various identified touch points and the healthcare providers not only are able to provide facilitation but can address the palpable barrier that are present and empathetically manage the disease keeping their functional status in mind .The Elderly who commences the journey with the diagnosis of type 2 Diabetes can be ensured better outcome and improved quality of life, if we as health care providers remain aware about these actors at the varying points of the pathway. We need to learn about this journey of the elderly living with Diabetes which remains largely neglected , discover the nodal points of addressal and connect in the true sense of it.

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