

**Mini Review**

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# A Methodology to Elicit Values and Strategies in Diabetes Management



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## Abstract

This exploratory study, utilizing qualitative laddering interviews, introduced a novel methodology to identify patient values and strategies that impact behavior and promote adherence to complex diabetes treatment plans. The use of guided telephone interviews is a feasible and reproducible method to assist patients with the management of their diabetes. In-depth interviews using a laddering interview technique is a unique methodology that is reproducible.

**Keywords:** Type 2 diabetes; Chronic diseases; Glucose self-monitoring; Meal planning; Daily physical activity; Medication adherence

## Mini Review

Type 2 diabetes is one of the most prevalent chronic diseases worldwide [1]. Diabetes self-care is typically multifaceted (e.g., glucose self-monitoring, meal planning, daily physical activity, medication adherence); many diabetes patients struggle to follow the multipart adherence plans from their providers [2,3]. In addition to the complex behavioral and attitudinal aspects, multipart adherence involves a motivational component. As the number of adherence tasks increases, chronic disease management becomes difficult and time consuming with patients juggling competing demands [4,5]. Interventions have included a broad range of designs, targets, and goals with varied success rates in promoting adherence and achieving valued outcomes [6,7]. Few have delved deeply into the underlying values and needs that determine which behaviors a patient chooses to manage their health.

The objective of this study was to identify patient values and strategies and apply an existing methodology in a new context to assess management of health and adherence to treatment plans in diabetes. Adult patients (N=108) with type 2 diabetes were selected to balance strata defined by sex, race (Black or White), and, as a surrogate marker for success in diabetes management,

A1C level ( $\leq 7\%$ ,  $> 7\%$ ). Trained, certified interviewers used an in-depth laddering technique [8,9] during a telephone interview with participants. Interviews lasted 60-90 minutes, with some as short as 35 minutes. Interviews were electronically recorded and fully transcribed.

Interviewers followed a standardized, open-ended process. After introducing themselves to participants, the interviewers reviewed the overall goals of the interview, and reminded the participant of the confidentiality of the audiotaped interview process and their ability to terminate the interview at any point. The carefully constructed and piloted process guided the participants through a series of questions aiding them to identify specific attributes (issues or topics) associated with type 2 diabetes, the impact or consequences of those attributes (positive, negative, or neutral), and – ultimately – the core personal values associated with the impact of the identified attributes.

Initial interview questions were general, asking what it was like to live with diabetes on a day-to-day basis, and included multiple probes to encourage the participants to focus on diabetes and reflect carefully on its impact in their lives. Once interviewers elicited a specific attribute (for example, low blood

sugar, health care provider, medication, physical exercise, etc...), the interviewers probed the participants to consider how they understood the attribute. This was done in the context of their disease, whether the attribute was connected to a positive or negative consequence, and what the attribute and consequence gave them “a sense of” or what “need” they thought of in relation to the attribute and its consequence (i.e., the value they associated with the attribute and its impact). For example, values included responses such as control over one’s own life, belonging/fitting in, and appreciation for life. Specific connections between attributes, consequences, and values are “chains.” Once a participant stopped providing new information through the laddering technique (i.e., interview reached saturation), interviewers moved to a discussion of other health issues (comorbidities) and asked for recommendations regarding what he/she would have valued knowing when first diagnosed with diabetes.

Participants were 56.6 (standard deviation (SD),10.3) years old, majority female (58.3%), with a mean body mass index of 35.7 (SD, 9.4) m/kg<sup>2</sup>. Ninety-nine (92%) of the 108 participants who began a laddering interview provided mapping information on attributes, benefits/consequences and values. One interview was incomplete, and eight inaudible electronic transcripts were excluded.

A total of 946 attributes/starts of chains were derived from the 99 maps. The average number of attributes per participant was 9.6 (the modal number of attributes was 5 per person), with a range from 2 to 26. Of these 946 starting attributes, 527 (55.7%) resulted in complete chains, containing all steps in the ladder--attributes, benefits/consequences, and values. All chains contained an attribute as the starting point, by definition—but some chains contained only one other component. The most common value elicited was love/belonging, which accounted for close to 15% of all mentions of values elicited in the interviews. We identified 25 distinct groups of values and the most common five groups (love/belonging, self-care, control/autonomy, survival, and accomplishment) accounted for close to 60% of all elicited values.

Common attributes identified were diet habits/meal planning (12.9%) and physical activity/exercise (11.4%), comorbid physical conditions (10.3%), diabetes diagnosis (11.0%) and “big picture” management of life with diabetes (8.2%). These five attributes cumulatively accounted for close to 55% of the starting attributes. The most frequent complete chain was physical activity/exercise followed by a positive benefit followed by the value of self-care (2.7% of completed chains, n=14 chains). The next most common complete chain (2.1%, n=11) was personal relationships followed by a positive benefit followed by the value of love/belonging. All other complete chains appeared with a frequency below 2%, indicating the large degree of variability among this population

in the connections they expressed between attributes and values. Large differences in frequency of attributes or values were not identified across the eight cells defined by the sampling strata variables (race, gender and A1c status).

We developed a reliable method for coding these data and converting the chains to a SAS® (SAS Institute, Cary, NC) data file. This data conversion allows for more complex analyses than typical for qualitative laddering data and allows for the potential of multivariable modeling with the inclusion of data derived from various sources.

The use of in-depth laddering telephone interviews is feasible with a geographically diverse population and more economical than face-to-face interviews. Although the interviews covered sensitive issues, the patients were positively engaged in the process. No participants chose to terminate the interview. This exploratory study of the laddering interview technique demonstrates a reproducible and novel methodology for conducting in-depth interviews supporting patients with diabetes to manage their health and adhere to complex treatment plans.

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### Conflicts of Interests

The authors from Wake Forest have no conflicts of interest to disclose. The study was supported by an unrestricted grant from MSD and co-author Heather L. Black, PhD is employed by MSD.

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