ORIGINAL ARTICLE

Age Differences in Expectations and Readiness Regarding Lifestyle Modifications in Individuals at High Risk of Diabetes

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ABSTRACT. Bouchard DR, Langlois M-F, Domingue M-E, Brown C, LeBrun V, Baillargeon J-P. Age differences in expectations and readiness regarding lifestyle modifications in individuals at high risk of diabetes. Arch Phys Med Rehabil 2012;93:1059-64.

Objective: The main objective of this study was to determine whether expectations and readiness to modify eating habits and physical activity (PA) level are different between young and older individuals with prediabetes who agreed to participate in a lifestyle modification program.

Design: Cross-sectional analysis.

Setting: Primary care or referral center.

Participants: Adults between ages 27 and 78 years (N=74) were tested before starting a 12-month lifestyle intervention.

Interventions: Not applicable.

Main Outcome Measures: The visual analog scale questionnaire was used to assess expectations and readiness (ie, intentions, conviction, and self-confidence) to modify the PA level and eating habits. The PA level was assessed with a pedometer and eating habits with a questionnaire. Analyses were stratified by the age group: <60 years old versus ≥60 years old.

Results: Body mass loss expectations in terms of goal (−22.9% vs −17.9% of the current body mass; *P*=.04), acceptable (−15.6% vs −9.4%; *P*=.01), and failure (−7.6% vs −3.8%; *P*=.05) in future body mass loss were all greater for the younger group. Despite no significant age group difference in the initial PA level and eating habits, the youngest group had a greater intention to increase the PA level (89% vs 81%; *P*=.004) and to eat healthier (90% vs 85%; *P*=.001). Finally, the PA level and the consumption of fruits and vegetables, but not body mass, were associated with intentions or self-confidence to make some lifestyle modifications within age groups.

Conclusions: In individuals at high risk for diabetes, increasing age is associated with lower expectations and reduced readiness with regard to lifestyle modifications. Thus, age should be considered when planning a lifestyle modification program.

Key Words: Aging; Diet; Exercise; Prediabetic state; Rehabilitation.

TYPE 2 DIABETES (T2D) and prediabetes, namely, impaired fasting glucose and glucose tolerance, affect 23.5% of Canadians.[1] A major risk factor for T2D is obesity and, more importantly, abdominal obesity.[2,3] Different strategies have been developed to improve lifestyles, such as physical activity (PA) and diet, to prevent T2D.[4-8] Even if these strategies have been relatively successful in short-term[4] and long-term[9] studies, they do not induce clinically significant benefits in all participants. In fact, roughly one fifth of the individuals with prediabetes will develop T2D over a 3-year follow-up despite an intensive lifestyle intervention.[10]

Interestingly, some evidence shows that a lifestyle intervention could be more successful in older adults with prediabetes than in their younger counterparts.[4] Crandall et al[4] found that older adults presented greater body mass loss and a lower incidence of T2D after a lifestyle intervention. The authors speculated that these age differences could result from the fact that older adults are less likely to be employed, have less social responsibilities, and, therefore, have more time to devote to the intervention. However, those results might also be explained by the fact that the proposed intervention was more tailored to older individuals based on different expectations, intentions, and perceived capacity to modify eating habits and the PA level. A recent study reported that individuals' initial preferences for diet and exercise programs (cost, support, exercise duration, exercise structure, proposed diet, outcomes) affect the success of lifestyle intervention.[11] Furthermore, based on a meta-analysis, behavioral intentions would account for 28% of the variance in performing a particular behavior.[12] Finally, a study assessing attitudes toward exercise among age groups recently reported that age, rather than initial body mass, was associated with a greater intention to exercise, with participants younger than 35 years reporting a greater intention to exercise than those aged 35 to 60 years and those older than 60 years.[13]

Therefore, despite potential differences in expectations, intentions, and readiness to modify lifestyle between age groups, a standard "one-size-fits-all" protocol is usually applied to improve individuals' lifestyles. Thus, the first objective of this study was to determine whether expectations and readiness to modify eating habits and the PA level, as determined by self-confidence, conviction, and intentions to engage in a lifestyle modification, are different between young and older individuals with prediabetes who agreed to participate in a lifestyle modification program. The second objective was to identify whether the PA level and eating habits are associated with expectations, intentions, and self-confidence to modify these behaviors prior to participation in a lifestyle modification program. We hypothesized that older adults present different

List of Abbreviations

BMI	body mass index
PA	physical activity
T2D	type 2 diabetes

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expectations and readiness to modify eating habits and the PA level when they decide to engage themselves in a lifestyle modification program as compared with younger adults.

METHODS

Participants

An invitation to take part in the study was sent to individuals who had an oral glucose tolerance test diagnostic for impaired glucose intolerance (7.8 and 11.0mmol/L after 2h) and/or an impaired fasting glucose (>7.0mmol/L). Seventy-four subjects agreed to participate in an intervention aiming to induce 5% to 10% body mass loss by increasing the PA level and improving eating habits over a 12-month period. Participants were excluded if they were unable to comply with the proposed intervention, had planned bariatric surgery, or had taken pharmacologic treatment for obesity or diabetes in the last 3 months. Only baseline data from this study are evaluated in this article. The hospital and the institutional review board approved the study protocol, and informed written consent was obtained from each participant.

Readiness to Modify Lifestyle

The weight-loss readiness tool questionnaire was used to assess expectations, intentions, conviction, and self-confidence to change lifestyles. This questionnaire was adapted from an earlier version published by our group[14] and from other published tools evaluating readiness to modify the PA level and eating habits.[15-17] This new version included a total of 22 questions (table 1). The weight-loss readiness tool questionnaire included questions referring specifically to perceived self-confidence to change (questions 15, 19, and 22), convic-

Table 1: Weight-Loss Readiness Tool Questionnaire

	Question	Question Clusters
1.	In the last 6 months, have you lost 10 lb or more?	Previous dieting and weight loss attempts
2.	Have you followed a structured diet in the last 6 months?	Previous dieting and weight loss attempts
3.	What is your goal body weight?	Weight expectations
4.	What is your desirable body weight?	Weight expectations
5.	What is your acceptable body weight?	Weight expectations
6.	What would be the body weight considered as a failure after the intervention?	Weight expectations
7.	I think I have a weight problem.	Readiness to change, assessed through visual analog scales[18]
8.	I have decided to lose weight.	Readiness to change, assessed through visual analog scales[18]
9.	I want to lose weight, but I don't know where to start.	Readiness to change, assessed through visual analog scales[18]
10.	I know how to lose weight.	Readiness to change, assessed through visual analog scales[18]
11.	In order to lose weight, I have started to modify some of my lifestyle habits.	Readiness to change, assessed through visual analog scales[18]
12.	In the next month, I am ready to start changing (a) my eating habits and (b) the PA level in order to lose weight.	Readiness to change, assessed through visual analog scales[18]
13.	In the past 6 months, I have already modified (a) my eating habits and (b) the PA level in order to lose weight.	Readiness to change, assessed through visual analog scales[18]
14.	I am convinced that I need to change (a) my eating habits and (b) the PA level.	Self-efficacy in diverse aspects of lifestyle modification, assessed through visual analog scales
15.	Right now I feel that I will be able to lose 10% of my body weight within the next 6 months.	Self-efficacy in diverse aspects of lifestyle modification, assessed through visual analog scales
16.	If I lose at least 10% of my current body weight within the next 6 months, I will improve my (a) health, (b) physical appearance, (c) personal pride, (d) self-confidence, (e) motivation, (f) interpersonal relationships, and (g) social life.	Self-efficacy in diverse aspects of lifestyle modification, assessed through visual analog scales
17.	If I do more PA, it will help me to lose weight.	Self-efficacy in diverse aspects of lifestyle modification, assessed through visual analog scales
18.	If I increase my PA level, I think it will improve my (a) health, (b) physical appearance, (c) personal pride, (d) self-confidence, (e) motivation, (f) interpersonal relationships, and (g) social life.	Self-efficacy in diverse aspects of lifestyle modification, assessed through visual analog scales
19.	I think that I am able to increase the PA level.	Self-efficacy in diverse aspects of lifestyle modification, assessed through visual analog scales
20.	If I improve my eating habits, it will help to lose weight.	Self-efficacy in diverse aspects of lifestyle modification, assessed through visual analog scales
21.	If I improve my eating habits, I think it will improve my (a) health, (b) physical appearance, (c) personal pride, (d) self-confidence, (e) motivation, (f) interpersonal relationships, and (g) social life.	Self-efficacy in diverse aspects of lifestyle modification, assessed through visual analog scales
22.	I think that I am able to improve my eating habits.	Self-efficacy in diverse aspects of lifestyle modification, assessed through visual analog scales