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Relationships between health literacy, motivation and diet and physical activity in people with type 2 diabetes participating in peer-led support groups

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ABSTRACT

Aims: To investigate associations between health literacy (HL) and diet and physical activity, and motivation and diet and physical activity in Danish people with type 2 diabetes.

Methods: We used a cross-sectional design including 194 individuals with type 2 diabetes participating in peer-led support groups provided by the Danish Diabetes Association between January–December 2015. The participants completed a questionnaire at the first meeting including; The Summary of Diabetes Self-Care Activities (SDSCA) measure, The Treatment Self-Regulation Questionnaire (TSRQ) (Self-Determination Theory) measuring type of motivation, and two HL scales: The HLS-EU-Q16, and the Diabetes Health Literacy scale (Ishikawa, H). Data were analyzed using linear regression models adjusting for age, gender, educational level, diabetes duration, motivation and HL.

Results: The adjusted β (95%CI) showed that autonomous motivation and functional HL were associated with following recommended diet: autonomous motivation; 0.43 (0.06; 0.80) and functional HL; 0.52 (0.02; 1.00). Autonomous motivation was related to following physical activity recommendations; β (95%CI) 0.56 (0.16; 0.96).

Conclusions: This study indicates that, for people with type 2 diabetes, functional HL and autonomous motivation may be important drivers for following diet recommendations, and autonomous motivation may be the most important factor for following recommendations regarding physical activity. These concepts may therefore be highly relevant to address in interventions to people with type 2 diabetes. Different interventions are suggested.

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1. Introduction

Healthy diet and physical activity are core components in type 2 diabetes self-management [1]. Investigation of factors and mechanisms that influence health behavior are therefore needed. Self-determination theory (SDT) emphasizes the importance of the underlying reasons for behavior [2]. Following the recommendations for diet and physical activity by patients with type 2 diabetes usually reflect extrinsic motivation (behaving in order to attain some separable outcomes). SDT presents different types of extrinsic motivation, and states the quality of motivation depends on whether the regulation of behavior is imposed by others or oneself, e.g. in order to avoid guilt (controlled motivation) or by the true feeling of free choice and personal endorsement of the outcomes attained by the behavior (autonomous motivation). One route to autonomous motivation for behavior change is grasping the meaning of the behavior change and synthesize that meaning with respect to other goals and values [2]. The internalization process can be supported by social contexts that support the needs of autonomy, competence and relatedness [2]. One part of autonomy support is to provide knowledge, but involves also other highly important aspects such as attitude and relations that go beyond the cognitive aspect [3]. Williams et al. found that perceived autonomy support in people with type 2 diabetes was associated with statistically significant decreases in HbA1c driven by statistically significant increases in autonomous motivation and perceived competence [4]. Studies from different countries support the association between autonomous motivation and following diet and physical activity recommendations [5–8].

Autonomous motivation is strongly in accordance with empowerment as operationalized by Schulz et al. [9]. Schulz et al. found the concepts empowerment and health literacy (HL) to be two different concepts, but both very important concepts when promoting appropriate health behavior [9]. The concept of HL concerns the “ability to access, understand, appraise and apply information to make decisions regarding health”, and has been conceptualized to comprise three components; functional, interactive/communicative and critical HL [10]. Functional HL consists of basic reading and writing skills applied for health, whereas interactive/communicative HL is the skill to extract health information and derive meaning from different forms of communication, and to apply this information to changing circumstances. Critical HL allows the patient to critically analyze information and to use this information to achieve greater control over situations” [11]. Lower functional HL has been found associated with higher HbA1c levels in people with type 2 diabetes [12,13]. To our knowledge, communicative and critical HL has not been analyzed in relation to health behavior or clinical outcomes in people with type 2 diabetes.

As HL and motivation are two different but related concepts found to be positively associated with health in people with type 2 diabetes; we aimed to investigate associations i) between HL and health behavior (diet and physical activity) adjusted for motivation, and ii) between motivation and health behavior (diet and physical activity) adjusted for HL in Danish people with type 2 diabetes. We expected that both

autonomous motivation and HL levels would be associated with following diet and physical activity recommendations. We expected no associations between controlled motivation and following diet and physical activity recommendations.

2. Methods

2.1. Design and procedure

We used a cross-sectional design including 194 people with type 2 diabetes. They participated in a peer-led support group provided by the Danish Diabetes Association as a routine service across Denmark in local community settings with consecutively inclusion. Between January–December 2015, the peer-lead supporters of the groups were asked to encourage all participants with type 2 diabetes (n = 649) to complete the questionnaire at the first meeting. Participants took, on average, 30 min to complete the questionnaire. Data was collected as part of the Danish contribution to “the Diabetes Literacy Project (DLP) Participant Pre-questionnaire”, part of the FP7 Diabetes and Literacy programme [14].

2.2. Outcomes

2.2.1. Summary of Diabetes Self-Care Activities (SDSCA) measure

Two subscales, general dieting and exercise, from the validated Summary of Diabetes Self-Care Activities (SDSCA) measure [15] were used to measure self-reported degree of following recommendations on diet and physical activity. Regarding diet, the SDSCA-questionnaire asked “How many of the last seven days have you followed recommended diet in relation to your diabetes?” and “On average, over the past months, how many days per week have you followed recommended diet in relation to your diabetes?”. Likewise, regarding physical activity, the SDSCA-questionnaire asked “On how many of the last seven days did you participate in at least 30 min of physical activity” and “On how many of the last seven days did you participate in a specific exercise session (such as swimming, walking, biking) other than what you do around the house or as part of your work?”. The scores were calculated as the average of the 2-items for each subscale. Internal and test-retest reliability have been found adequate for these scales. Furthermore, the validity of these scales has been supported by significant correlations with multiple measures using different methods of self-report [15].

2.2.2. The Treatment Self-Regulation Questionnaire (TSRQ)

The SDT-questionnaire scale, The Treatment Self-Regulation Questionnaire (TSRQ) was used to measure the degree of autonomous- and controlled motivation [16]. Questions like “The reason I follow recommendations regarding diet and physical activity is that, I personally believe that these are important in remaining healthy” are used to measure autonomous motivation, whereas questions like “The reason I follow recommendations regarding diet and physical activity is that, other people would be upset with me if I didn’t” are used to measure controlled motivation. Responses to the SDT

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