

Exploring the association between oral health literacy and alexithymia

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Low health literacy and alexithymia have separately been emphasized as barriers to patient-practitioner communication, but the association between the two concepts has not been explored. **Objective:** To test the hypothesis that low oral health literacy and alexithymia are associated. **Method:** Adults (n=127) aged 21-80 years (56% women) participated in this cross-sectional study. Oral health literacy was assessed using the interview-based Adult Health Literacy Instrument for Dentistry (AHLID) with scores from 1-5. The self-administered Toronto Alexithymia Scale (TAS-20) was used to assess three distinct TAS-20 factors and TAS-20 total score. **Results:** Significant negative correlations between AHLID scores and TAS-20 factors 2, 3 and TAS-20 total score were found. Regression analyses showed that TAS-20 factor 3, externally-oriented thinking ($\beta=-0.21$, $SE=0.02$, $p=0.017$), and TAS-20 total score ($\beta=-0.18$, $SE=0.01$, $p=0.036$) were significant predictors of AHLID level. **Conclusion:** The hypothesis that low oral health literacy is associated with alexithymia was supported. This finding proposes that alexithymia may be considered as a possible factor for low oral health literacy. However, the correlations are not strong, and the results should be regarded as a first step to provide evidence with additional research on this topic being needed.

Key words: alexithymia, health literacy, oral health literacy, patient-practitioner communication, personality, Norway

Introduction

Dental professionals must be able to communicate effectively with patients from a variety of backgrounds including those with various potentially problematic physical and mental diseases, diverse personality traits and psychosocial statuses. Encounters with dental professionals are opportunities for patients to gain oral health information, guidance and skills for oral health self-management though patients need adequate health literacy for this to succeed (Chinn, 2011). Oral health literacy is defined as the degree to which individuals have the capacity to obtain, process, and understand basic oral health information and services needed to make appropriate health decisions (US Department of Health and Human Services, 2003). More recently, the concept has broadened to encompass the simultaneous use of a more complex and interconnected set of abilities, such as reading and acting upon written health information, communicating needs with health professionals, and understanding health instructions (Peerson and Saunders, 2009). Numerous studies have reported the prevalence of limited health literacy in adults: 47% in Europe and over a quarter in the US (HLS-EU Consortium, 2012; Paasche-Orlow *et al.*, 2005). Systematic reviews regarding health literacy and health outcomes have found that low health literacy is associated with several diseases and conditions, poorer health related knowledge and comprehension, increased hospitalization and use of emergency care, and decreased health preventive behavior (Berkman *et al.*, 2011; Easton

et al., 2010). Recent research concerning adult oral health literacy reports an association between low oral health literacy and more severe periodontal disease (Wehmeyer *et al.*, 2014), as well as failing to attend dental appointments (Holtzman *et al.*, 2014). Further, high oral health literacy is associated with better self-reported oral health status, and self-efficacy is proposed to mediate the effect of literacy on oral health status (Lee *et al.*, 2012). Communication researchers have emphasized the role of health literacy in the patient-practitioner relationship (Roter *et al.*, 2007).

Some 40 years ago, Sifneos (1973) introduced the construct of alexithymia: literally a lack of words for feelings (a-lexi-thymia). Alexithymia is regarded a stable personality trait, and emerged as a paradigm linking emotion with health. It is described as a multifaceted construct encompassing difficulty identifying subjective emotional feelings and distinguishing between feelings and the bodily sensations of emotional arousal, difficulty describing feelings to other people, an impoverished fantasy life, and a stimulus-bound, externally-oriented cognitive style (Nemiah *et al.*, 1976). Found in 11-13% of adults (Salminen *et al.*, 1999; Franz *et al.*, 2008), alexithymia is considered a risk factor for a variety of medical and psychiatric disorders like somatization, anxiety, depression and substance use disorders (Bagby and Taylor, 1997). Alexithymics show little insight into their feelings, symptoms and motivation, and may experience confusion, give vague answers, and report physical states when asked about their feelings (Graugaard *et al.*, 2004).

Furthermore, alexithymia may contribute to poor health by prompting unhealthy behaviors, e.g. poor nutrition and hygiene may be impeded by the failure to experience or recognize potentially adaptive feelings such as fear, guilt, or even self-pride and, importantly, it is considered a barrier to successful patient-clinician communication (Lumley *et al.*, 2007).

Recently, dental research explored the association between alexithymia and oral health-related issues. Dental anxiety and alexithymia were associated among a general population aged 30 and over and among adults in dental health centres (Pohjola *et al.*, 2011; Viinikangas *et al.*, 2009). Also, it has been proposed that alexithymia might be reflected in poorer oral health-related quality of life, regardless of dental health status, depression, anxiety and socio-demographic factors (Mattila *et al.*, 2012). Temporomandibular disorder patients with evident alexithymia had higher presence of pain than those without (Mingarelli *et al.*, 2013).

Clinicians commonly experience some patients having trouble communicating and/or understanding information. Communication problems in medical encounters, poorer treatment compliance, and treatment outcomes have all been observed in alexithymic patients (Porcelli *et al.*, 2003) and patients with limited health literacy (Berkman *et al.*, 2011; Easton *et al.*, 2010; Wehmeyer *et al.*, 2014; Holtzman *et al.*, 2014). Researchers have recently advocated the consideration of personality traits along with oral health literacy as risk factors or screeners for poorer oral health outcomes (Lee *et al.*, 2012). To our knowledge, no studies have been investigating an association between health literacy/oral health literacy and alexithymia. Taken together, our clinical experience and the described literature indicating separately that alexithymia and limited health literacy are barriers to successful patient-practitioner communication made us question if the two concepts could be associated with each other. Therefore, we hypothesized that low oral health literacy is associated with alexithymia and set out to test the hypothesis in a sample of adult patients.

Method

The participants were recruited from a list of individuals who had contacted the University Dental Clinic, Tromsø, Norway for enrolment as patients for dental and dental hygienist students, but had not yet started treatment. To be

included in the study, participants had to be aged over 20 years, speakers of Norwegian and have no severe visual impairment. Prior to the investigation, written consent was obtained, and the study information was repeated orally. The investigation was conducted at the Public Dental Service Competence Centre of Northern Norway, Tromsø, in accordance with the World Medical Association Declaration of Helsinki following approval by the Regional Ethical Committee for Medical and Health related research before the recruitment of participants started.

The Adult Health Literacy Instrument for Dentistry, AHLID (Stein *et al.*, 2015), assessed oral health literacy having been validated as a Norwegian instrument consisting of ten printed oral health information texts e.g. medicine prescriptions, post-treatment information and brochures on dental diseases, all frequently used by adults to complement communication with dental professionals. Participants were asked to read the health information texts then answered questions on their content. The texts and questions correspond to five levels of oral health literacy ranging from 1 (lowest) to 5 (highest) (Table 1). An interview guide was used to score participants' according to AHLID. The interviews took place in a suitable room free from disturbing noises and dental equipment. All AHLID interviews were conducted by the same trained researcher.

Alexithymia was assessed using the self-administered Toronto Alexithymia Scale (TAS-20) (Bagby *et al.*, 1994). The 20 items are rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Total scores range from 20 to 100 and are categorized: 20-51, non-alexithymic; 52-60, borderline-alexithymic; 61-100, alexithymic. Three empirically validated TAS-20 factors reflect distinct dimensions of alexithymia: factor 1, difficulty in identifying feelings; factor 2, difficulty describing feelings to others; factor 3 externally-oriented thinking. TAS-20 has been translated into Norwegian and validated then evaluated to have adequate reliability (Taylor *et al.*, 2003).

For between-group comparisons, independent-sample t-tests and chi-square tests were performed on continuous and categorical variables, respectively. Pearson's correlations were used to investigate bivariate associations between AHLID scores and TAS-20 scores. Linear multiple regression analyses were used to investigate if TAS-20 scores can predict AHLID scores. Analyses were performed using SPSS v21.0 with $P < 0.05$ considered statistically significant.

Table 1. Description of literacy levels and distribution of AHLID scores (n=127)

<i>Literacy levels and descriptors</i>		<i>AHLID scores, %</i>
Level 1	Reading a short text to locate a single piece of information which is identical or synonymous to the information given in the question.	1
Level 2	Reading and locating a single piece of information in a relatively short text with plausible, but incorrect distracting information, or to integrate two or more pieces of information from the text.	28
Level 3	Reading and making matches that require low-level inferences. Distracting information is present in the text, but is not located near the correct information.	45
Level 4	Reading and performing multiple-feature matches as well as to integrate information from complex or lengthy passages.	23
Level 5	Reading and searching for information in dense text which contains a number of plausible distractors. Participants may have to perform high level inferences in order to provide a correct answer to the question.	3

Results

Of the 146 adults giving informed consent, two were excluded as they did not fit the inclusion criteria, eight were not available to participate in the data collection period, and nine did not complete the questionnaires, leaving 127 participants (56% women). The participants mean age was 48 years (range 21-80) with mean completed years of education being 13 years (range 7-20). There were no significant differences by gender in these respects.

The distribution of oral health literacy is presented in Table 1 and those for TAS-20 factors and total scores in Table 2. The overall mean TAS-20 scores showed that 72% of the participants were non-alexithymic, 18% borderline and 10% alexithymic. There were no significant differences by gender for AHLID scores, TAS-20 factor 1 and TAS-20 total score. However, men had significantly higher scores on factor 2 (mean 13.2, SD 3.7 vs. mean 11.2, SD 3.2, $p < 0.01$) and factor 3 (mean 21.4, SD 3.8 vs. mean 18.8, SD 3.9, $p < 0.001$) on TAS-20. Bivariate correlation analyses showed a significant negative correlation between AHLID levels and TAS-20 factors 2, 3 and TAS-20 total score (Table 3). Gender, age and years of education did not correlate with AHLID scores. Multiple regression analysis with AHLID score and TAS-20 factors 1-3 showed that TAS-20 factor 3, externally-oriented thinking, was a predictor of AHLID score ($\beta = -0.21$, $SE = 0.02$, $p = 0.017$, $R^2 = 0.45$), when controlled for gender, age and years of education. Further, the subsequent multiple regression analysis showed that TAS-20 total score was a predictor of AHLID score ($\beta = -0.18$, $SE = 0.01$, $p = 0.036$, $R^2 = 0.27$).

Table 2. Distribution of TAS-20 scores (n=127)

	Min	Max	Mean	SD
TAS-20 factor 1 ^a	7	27	14.5	5.0
TAS-20 factor 2 ^b	5	19	12.1	3.6
TAS-20 factor 3 ^c	10	29	19.9	4.1
TAS-20 total score ^d	22	70	46.5	9.6

^a Difficulty identifying feelings; ^b Difficulty describing feelings; ^c Externally-oriented thinking; ^d Possible range 20-100

Table 3. Bivariate correlation between AHLID scores, gender, age, years of education, TAS-20 factors and TAS-20 total score (n=127)

	Pearson's Correlation, <i>r</i>	<i>P</i>
Gender ^a	0.067	0.456
Age ^b	-0.067	0.455
Years of education	0.088	0.326
TAS-20 factor 1 ^c	-0.062	0.487
TAS-20 factor 2 ^d	-0.187	0.035
TAS-20 factor 3 ^e	-0.235	0.008
TAS-20 total score	-0.201	0.023

^a 0=male, 1=female; ^b Age in years; ^c Difficulty identifying feelings; ^d Difficulty describing feelings; ^e Externally-oriented thinking

Discussion

Our results support the hypothesis that low oral health literacy is associated with alexithymia. Findings from the bivariate correlation analyses between AHLID and TAS-20 showed that low oral health literacy scores were associated with TAS-20 factor 2, 3 and TAS-20 total score. The multiple regression analyses showed that TAS-20 factor 3, externally-oriented thinking, and TAS-20 total score were significant predictors of AHLID score, indicating that the personality trait alexithymia may be a factor in low oral health literacy. Clinical dental professionals should be aware that some patients exhibit problems in communicating their feelings and understanding oral health information. Individuals with an externally-oriented cognitive style prefer a rather superficial, unemotional perception, and seem to be especially focused on external circumstances rather than their own behavior (Lane *et al.*, 1996). For instance, an alexithymic patient with periodontitis might not be able to realize that his/her smoking behavior and inadequate oral hygiene reduces the success of the periodontal treatment, and may blame the clinician if the treatment outcome is inadequate. Further, patients with alexithymia are less skilled at recognising both verbal and nonverbal emotional cues from the clinician (Lane *et al.*, 1996), emphasizing the importance of explicit verbal communication initiated by clinicians. In addition, verbalised empathic response from health professionals has been considered crucial for the post-consultation satisfaction for patients with alexithymia, and should therefore be regarded as a basis for a solid clinician-patient alliance (Graugaard *et al.*, 2004). When it comes to poor health literacy, barriers in a clinical context may be as much a problem of insufficient clinician competence to reduce unnecessary complexity and improve their communication skills, as it is a problem of low health literacy skills in patients (Paasche-Orlow and Wolf, 2007). It has been argued that both lack of awareness of health literacy by the healthcare professional and the patients' reluctance to acknowledge literacy needs contribute to poor communication (Plimton and Root, 1994). Considering our results, we question if this may be associated with an alexithymic personality trait in certain patients. We do realize that some patients may indeed show reluctance to acknowledge literacy needs, but propose that some of these patients might actually be inhibited to acknowledge this due to their personality.

As surveys of alexithymia (Salminen *et al.*, 1999; Franz *et al.*, 2008) and health literacy (HLS-EU Consortium, 2012; Paasche-Orlow *et al.*, 2005) have revealed that many individuals in general populations are alexithymic or suffer from low health literacy, clinicians' communication skills are required to reach out to these patients to prevent oral diseases. Communication in dentistry should be considered a core skill rather than an optional extra. Three quarters of US dentists identified a lack of health communication education in their dental school (Rozier *et al.*, 2011), underlining the importance of communication guidelines and tool kits for practicing dental professionals. Guidance does not differentiate communication by level of oral health literacy with a single approach considered appropriate for all (Rudd *et al.*, 2012). Even though evidence does not support clinical screening of

health literacy (Paasche-Orlow et al., 2008), it is crucial that dental professionals have knowledge that enables them to recognize these patients, and skills to adapt the communication to each patient's needs. A recent survey investigating oral health literacy awareness and practices among dentists, found that those who had experienced oral health literacy miscommunication perceived barriers to effective communication as more significant than dentists who had no such experience (Stowers et al., 2013).

Both clinicians and patients need communication skills. Dental professionals have neither the responsibility nor the competence to directly enhance patients' oral health literacy levels. Changing patients' personalities is obviously not an option. Nevertheless, dental professionals can meet these challenges by adapting their own communication to the individual patients' needs, and taking oral health literacy and personality traits like alexithymia into consideration. Dental professionals should be aware that they will encounter patients with problems communicating their emotions and/or understanding oral health information. However, it is likely that communicating with these patients in some cases still will be demanding, even though clinicians aim at individualized communication. Some individuals will unfortunately have impaired abilities to communicate due to their personality, whether they are patients or clinicians, which in turn is likely to affect the quality of care.

Limitations of the present study include a convenience sample of individuals seeking care at a university dental clinic. Individuals who volunteer for research and dental treatment might be less reluctant to talk to dental professionals than others, hence represent better alexithymia scores and oral health literacy levels than others. Due to the sample, results from this study should not be generalized. Nevertheless, our results regarding the distribution of both oral health literacy (HLS-EU Consortium, 2012; Paasche-Orlow et al., 2005) and alexithymia (Salminen et al., 1999; Franz et al., 2008) were similar to results from representative samples of general populations. The analyses were also limited by the inclusion of only Norwegian speakers, and will not give any indication regarding oral health literacy levels and alexithymia scores in subgroups of the population.

To our knowledge, this is the first study reporting associations between alexithymia and oral health literacy. Our results indicate that an alexithymic personality trait may be considered as a possible factor for limited oral health literacy. However, the correlations are not strong, and the results should be regarded as a first step to provide evidence. Obviously, additional research investigating the association between alexithymia and oral health literacy in a general population is needed. Nevertheless, it might be reasonable to include alexithymia and other personality traits in the ongoing discussions and future investigations aiming at understanding the wide concept of health literacy and the evolving field of patient-clinician communication.

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