# Health Literacy and Fear Avoidance Beliefs Among Women with Chronic Low Back Pain

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# Health Literacy and Fear Avoidance Beliefs Among Women with Chronic Low Back Pain

## Gesundheitskompetenz und Angstvermeidungsüberzeugungen bei Patientinnen mit chronischen lumbalen Rückenschmerzen

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**Key words**
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**Schlüsselwörter**
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## ABSTRACT

**Purpose** Low back pain is considered a major health issue universally. LBP patients may avoid certain activities due to their fear avoidance behavior. Health literacy has a huge influence on the health programs and service delivery models mainly in managing chronic low back pain. The aim of this study was to examine the relation between low back pain disability, fear avoidance beliefs' and health literacy.

**Materials and Methods** 227 female low back pain patients of age between 20 and 55 years were analyzed. Disability, fear avoidance, and health literacy were subjectively assessed using the Oswestry Disability Index (ODI), the Fear Avoidance Beliefs' Questionnaire (FABQ), and the Newest Vital Sign (NVS), respectively. Pearson correlation was used to determine the association between Disability, fear avoidance beliefs' and health literacy.

**Results** The high disability group had significantly poor beliefs related to physical activity (FAB-PA) as well as work (FAB-W). Low disability group had adequate literacy compared to those with the high disability. Greater disability was associated with higher levels of fear avoidance beliefs related to physical activity($r = 0.4$; $p - 0.00$) and work ($r = 0.3$; $p - 0.00$) and was negatively correlated with health literacy ($r = -0.4$; $p \leq 0.01$).

**Conclusion** The study findings showed that moderate relationship exists between disability and elevated fear-avoidance beliefs and patients with limited health literacy may have difficulty in self-management of back pain further leading to chronic disability. A multidisciplinary approach focusing on these aspects while assessing disability due to low back pain is needed.

## ZUSAMMENFASSUNG

**Ziel** Schmerzen im unteren Rückenbereich werden allgemein als bedeutendes Gesundheitsproblem angesehen. Patienten mit Schmerzen im unteren Rückenbereich sollten wegen ihres Angst-Vermeidungsverhaltens bestimmte Tätigkeiten vermeiden. Gesundheitskompetenz hat vor allem bei der Behandlung chronischer lumbaler Rückenschmerzen einen enormen Einfluss auf die Gesundheitsprogramme und Dienstleistungsmodelle. Ziel dieser Studie war es, die Beziehung zwischen durch Schmerzen im unteren Rückenbereich verursachter Behinderung, Angstvermeidungsüberzeugungen und Gesundheitskompetenz zu untersuchen.

**Materialien und Methoden** Es wurden 227 Patientinnen mit lumbalen Rückenschmerzen im Alter zwischen 20 und 55 Jahren untersucht. Behinderung, Angstvermeidung und Gesundheitskompetenz wurden subjektiv jeweils mit dem Oswestry Disability Index (ODI), dem Fear Avoidance Beliefs' Questionnaire (FABQ) und dem Newest Vital Sign (NVS) beurteilt. Zur Bestimmung des Zusammenhangs zwischen Behinderung, Angstvermeidung und Gesundheitskompetenz wurde die Pearson-Korrelation verwendet.

**Ergebnisse** Die Gruppe mit hoher Behinderung hatte signifikant schwache Überzeugungen in Bezug auf körperliche Aktivität (FAB-PA) sowie Arbeit (FAB -W). Die Gruppe mit niedriger Behinderung hatte angemessene Gesundheitskompetenz im Vergleich zur Gruppe mit hoher Behinderung. Größere Behinderung war mit einem höheren Grad an Angstvermeidungsüberzeugungen im Zusammenhang mit körperlicher Aktivität ($r = 0{,}4$; $p - 0{,}00$) und Arbeit ($r = 0{,}3$; $p - 0{,}00$) assoziiert und negativ mit der Gesundheitskompetenz korreliert ($r = -0{,}4$; $p \leq 0{,}01$).

**Fazit** Die Ergebnisse der Untersuchung zeigten, dass zwischen Behinderung und erhöhtem Angst-Vermeidungsglauben ein leichter Zusammenhang besteht und dass Patienten mit beschränkter Gesundheitskompetenz Schwierigkeiten bei der Selbstbehandlung von Rückenschmerzen haben können, was letztlich zu chronischer Behinderung führt. Es wird ein

multidisziplinärer Ansatz benötigt, der diese Aspekte fokussiert und dabei Behinderung aufgrund von Schmerzen im unteren Rückenbereich abschätzt.

**LIST OF ABBREVIATIONS**

| | |
|---|---|
| LBP | Low Back Pain |
| FAB | Fear Avoidance Beliefs |
| ODI | Oswestry Disability Index |
| NVS | Newest Vital Sign |

## Introduction

Low back pain (LBP) is a major health issue universally [1]. Although vast majority of people experience low back pain in some part of their life, only few may have ongoing disability [2]. It is important to identify the modifiable risk factors for chronicity and disability identified with LBP to provide health information and to improve the efficiency of treatment methods for patients as well as health care providers [3]. In spite of the fact that extensive research has been done to test the adequacy of treatment procedures for CLBP, prolonged disability and a rise in expenditure of health was observed [4, 5]. A number of factors can influence pain related behavior. Individuals experiencing severe pain may avoid certain activities due to fear of injury. There are many factors affecting fear avoidance beliefs such as low level of education and physician beliefs about back pain and physical activity [6]. Hence behavior and attitude related to pain is considered important while assessing LBP. The management of CLBP requires the active role of patients through behavioral and life style modifications [7]. Self-management is an integral part of effective management of CLBP [8] and health literacy plays important role in self-management of the symptoms [9].

Effective communication plays a major role to deliver high quality patient-centered health care [10]. Health literacy is a major element in patients' ability to achieve optimal health information. The capacity to get, understand and interpret the basic health information and a predictor of how a patient benefits from their health care system [11]. Health literacy education criteria are incorporated into the Joint Commission's accreditation of US human services offices. Furthermore, there is huge worldwide enthusiasm for health literacy proficiency exploration and practice. Health education is reliant on individual and systemic factors such as lay person's communication skills, health knowledge, culture, and current health condition. Health education incorporates numeracy aptitudes. For instance, ascertaining cholesterol and glucose levels, measuring medicines, and comprehension nourishment names all require math aptitudes. Notwithstanding essential proficiency aptitudes, health education requires information of wellbeing and knowledge of the disease. Individuals with constrained health education regularly need learning or have deception about the body and in addition the nature and reasons for ailment [12]. Without this knowledge, they may not comprehend the relationship between way of life components, for example, eating regimen and exercise and different health outcomes. Wellbeing data can overpower even persons with advanced proficiency aptitudes. Science related to health advances quickly. What individuals might have found out about health or science amid their school years regularly gets to be obsolete or overlooked, or it is fragmented. Health knowledge delivered in an unpleasant or new circumstance is impractical to be restrained [13]. Low health literacy associated with poorer wellbeing results in numerous chronic conditions despite the fact that this has not been likely in chronic low back pain. Individuals with poor back beliefs, high fear avoidance behaviors associated with low health literacy skills experience difficulty managing CLBP disability [14]. Furthermore, health literacy has a huge influence on the health programs and service delivery models mainly in managing a chronic health condition [15]. Therefore, the aim of this study was to assess the disability, fear avoidance beliefs and health literacy among Saudi women with chronic LBP and to determine the relationship between them.

## Methods

### Participants

A total of 227 participants with chronic low back pain were enrolled in the study and ethical approval was given by the Institutional review board of King Saud University. This study aims to explore avoidance beliefs and health literacy among Saudi women who reported chronic low back pain (> 3 months duration either intermittently or continuously). Subjects with acute or sub-acute LBP, those who have major abnormalities affecting their daily activities, or neurological symptoms due to spinal problems, and illiterate women were excluded. From an initial sample of N = 350, in this study 53 were excluded since they were unable to read either Arabic or English, 45 adults were excluded as they report acute low back pain and 25 due to missing health literacy data.

### Procedure

This was a cross sectional study. Recruitment was done from various pain clinics in Riyadh. All the participants were given information regarding the purpose and procedure of the study and a written informed consent was taken. Demographic characteristics such as age, job description, duration of pain, LBP episodes in the previous year, ability to seek health advice, and interference in daily activities due to LBP were noted. Disability due to low back pain, fear avoidance behavior and health literacy were assessed using the Oswestry Disability Index (ODI), Fear avoidance beliefs questionnaire (FABQ) and Newest Vital sign (NVS) respectively.

#### Disability

The ODI was used to measure the disability level for LBP. The ODI is one of the most commonly used outcome measures for individuals with LBP. It is a self-administered questionnaire that requires 5 min to complete and 1 min to score.in this research we used Version 2.0, it is a modification of the original ODI, its reliability has been shown to be high values ranging from ICC = 0.77–0.97 and it was validated against other scales such as visual analog scale (VAS), McGill Pain Questionnaire [16, 17]. The scores are calculated in percentages and highest score indicates severe disability; 0–20 – minimal disability; 21–40 % – moderate disability; 41–60 -severe disability; 61–80 % – crippled and 81–100 % – bedbound. Based on the median split of ODI scores, the participants were divided into low and high disability groups.

### Fear avoidance beliefs

The FABQ was used to assess the avoidance behavior due to LBP. It was developed by Waddell to investigate fear-avoidance beliefs among LBP patients in the clinical setting which concentrated on the patients' beliefs about the effect of their physical activity and work on LBP. It has 16 items; the patient rates each item from 0 – totally disagrees to 6 that is totally agreed. It consists of 2 subscales, the physical activity subscale FABQ (PA) has the items 1–5, with 24 possible points, (less than 15 is low FABQ (PA) and greater than 15 is high), while the work subscale FABQ (W) has the items 6–16, with 42 possible points, (less than 34 is low FABQ (W) and greater than 34 is high). Reliability of the first subscale FABQ (PA) is (ICC = 0.72–0.90) while the second subscale FABQ (W) has high reliability (ICC = 0.8–0.91). Accordingly, the total FABQ has excellent reliability (ICC = 0.97) [18].

### Health literacy

Health literacy was measured using NVS questionnaire. It was developed from a series of scenarios, composed of 6 questions that required the participant to read a nutritional label then answering the questions about different scenarios. In this study, the participant was given a nutrition label with specified time not more than 3 min then the rater started asking the 6 questions in sequence for scoring, giving the participant as much time as needed to refer to the nutrition label. In this questionnaire each correct answer was given 1 point and the maximum score 6 points; Score of 0–1 suggests high likelihood (50 % or more) of limited literacy, 2–3 indicates the possibility of limited literacy and 4–6 almost always indicates adequate literacy. The reliability and validity of this scale was established (95 % CI, 0.63–0.81; P < 0.001) [19, 20].

## Results

Of the 350 women initially screened, 227 were recruited. They ranged in age from 20 to 55 years. Participants were divided into low disability and high disability groups based on the median split of ODI scores. Descriptive data was analyzed using chi square and ANOVA for categorical and continuous data respectively. Pearson Correlation analysis was used to examine the association between disability, fear avoidance and health literacy. Data was analyzed using SPSS-21 software.

### Baseline characteristics

Out of 227 individuals with low back pain, 152 (67 %) were with low disability as measured by ODI and 75 (33 %) with high disability. A significantly higher proportion of high disability group reported greater than 10 episodes of LBP in the last year and also had (86 vs. 40.1 %) interference in their daily activities ($p < 0.05$) (▶ **Table 1**). Multi variable analysis showed age, LBP episodes, interference of daily activities, and seeking health advice were possible confounders to the outcome.

### Correlation findings

The mean score of FABQ (PA) for low disability group was 9.5 (SD = 5.9; range = 0–24) and high disability group was 15.4 (SD = 3.4; range = 0–24). The high disability group had high fear avoidance related to physical activity as well as work compared to those in low disability group (▶ **Table 1**). Correlation analysis showed that greater disability was associated with higher levels of fear avoidance beliefs related to physical activity($r = 0.4$; $p = -0.00$) and work ($r = 0.3$; $p = -0.00$).

▶ **Table 1** Demographic characteristics of the participants.

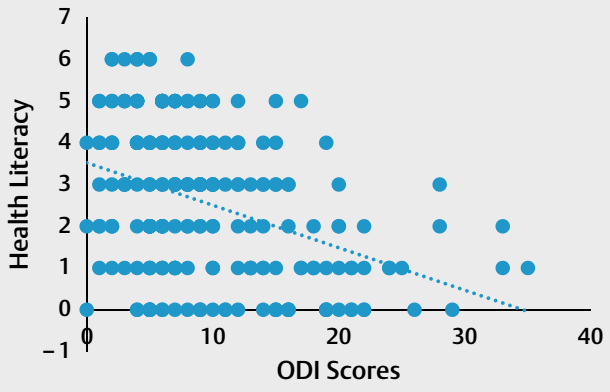
| | Low disability | High disability |
|---|---|---|
| N, (%) | 152 (67) | 75 (33) |
| Age (years), N (%) | | |
| 20–40, (mean (SD)) [24.2 (4.1)] | 139 (91) | 39 (52) |
| 41–55, (mean (SD)) [47.4 (4.8)] | 13 (9) | 36 (48) |
| Episodes of LBP in the last year, N (%) | | |
| 1–3 episodes | 29 (19) | 12 (16) |
| 4–10 episodes | 54 (35.5) | 13 (17.4) |
| <than 10 episodes | 69 (45.5) | 50 (66.6) |
| Seeking health professional advice, N (%) | | |
| Yes | 39 (25.6) | 41 (54.6) |
| No | 113 (74.4) | 34 (45.4) |
| LBP interfering with daily living activities, N (%) | | |
| Yes | 61 (40.2) | 65 (86.6) |
| No | 91 (59.8) | 10 (13.4) |
| ODI score, (mean (SD)) | 5.7 (2.7) | 24.4 (2.9) |
| FABQ-PA score [0–24], (mean (SD)) | 9.5 (5.9) | 15.4 (3.4) |
| FABQ-PA low, N (%) | 126 (82.8) | 43 (57.4) |
| FABQ-PA high, N (%) | 26 (17.2) | 32 (42.6) |
| FABQ-W score [0–42], (mean (SD)) | 15.09 (10.2) | 24 (13.7) |
| FABQ-W low, N (%) | 145 (95.3) | 68 (90.6) |
| FABQ-W high, N (%) | 7 (4.7) | 7 (9.4) |
| Health literacy (mean (SD)) | 3 (1.7) | 1.33 (0.6) |
| High likelihood of limited literacy [0–1], N% | 33 (21.7) | 43 (57.3) |
| Possibility of limited literacy [2–3], N% | 55 (36.1) | 22 (29.4) |
| Indicates adequate literacy[ 4–6], N% | 64 (42.2) | 10 (13.3) |

* N-sample; %-percentage; SD-standard deviation; LBP-low back pain; ODI-Oswestry Disability Index; FABQ-Fear Avoidance Belief questionnaire; PA-physical activity; W-work

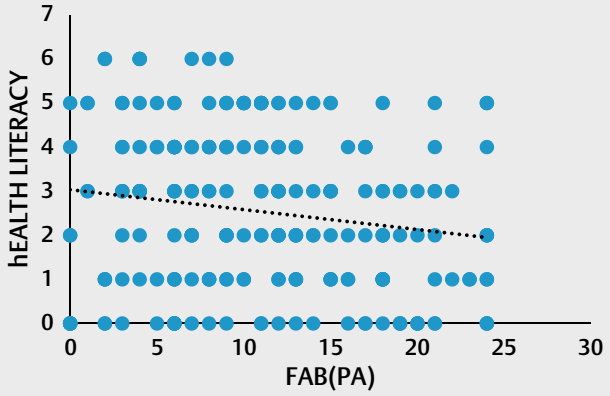
The low disability group had adequate literacy (42.1 %; range = 4–6) as assessed by NVS compared to those with high disability (57.3 % showed limited literacy; range = 0–3). Pearson correlation analysis showed that disability was negatively correlated with health literacy ($r = -0.4$; $p \leq 0.01$) (▶ **Fig. 1**).Further analysis showed a weak negative correlation between FAB (PA) and health literacy ($r = -0.1$; $p \leq 0.01$) (▶ **Fig. 2**); and no association between FAB (W) and health literacy ($r = -0.05$; $p \leq 0.01$) (▶ **Fig. 3**).

## Discussion

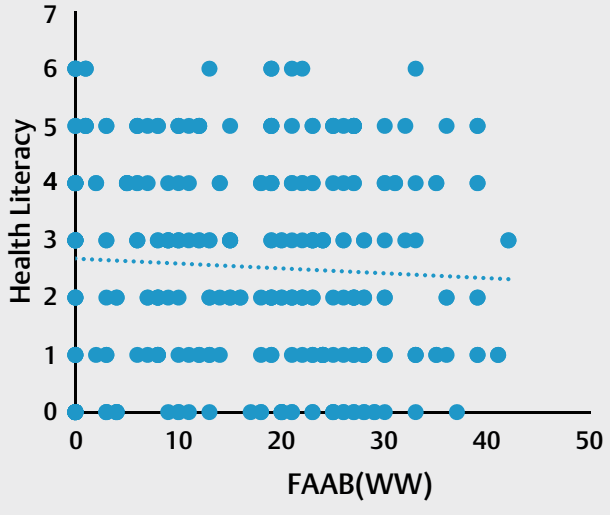
This study was designed to examine the association between disability due to LBP and factors such as fear avoidance and Health literacy in chronic low back pain Saudi women. Study results showed




▶ **Fig. 1** Correlation analysis between Disability (ODI Scores) and Health Literacy.




▶ **Fig. 2** Correlation analysis between Disability Fear avoidance (FABQ-PA) and Health Literacy.




▶ **Fig. 3** Correlation analysis between Disability Fear avoidance (FABQ-W) and Health Literacy.

that high disability group (66.6 %) experienced greater than 10 episodes of LBP in the last year and more than half of the respondents (54.6 %) sought health advice. These findings were consistent with previous studies indicating that significant relation exists between LBP and seeking health advice [21]. It was also observed that high disability resulted in relatively greater interference in their daily activities. Previous reports suggested that back pain was associated with self-reported difficulty in functional activities [22]. Pain is one of the most important cognitive factors leading to fear. In chronic pain conditions, fear avoidance is considered maladaptive while confrontation is generally considered adaptive. An avoidance behavior leads to prolonged disability and is considered necessary to identify such behavior among LBP patients. Further, our results suggest that greater disability was associated with poor avoidance beliefs. This is in consistent with the results showing high level of disability leading to increased fear avoidance beliefs [14, 23]. Fear avoidance leads to physical and social inactivity, which further leads to prolonged disability [24]. The most important factors which can influence an individual's fear avoidance behavior are personal coping strategies and personality characteristics. These variables form a part of self-management of LBP disability and can be enhanced by health information and knowledge about the condition [25]. In fact, patients may encounter some challenges when attempting to explore the continually expanding health care system. Indeed navigation and understanding of available information is overwhelming even for above average literacy individual [26]. Health literacy can be enhanced by factors such as education, employment and monthly income [27]. Limited health literacy restricts the use of preventative health measures and is also associated with poor quality of life and more frequent emergency department visits and increased hospitalizations [28]. It may also result in decreased adherence to treatment regime [29]. Our results were consistent with previous studies that individuals with high disability were more likely to have limited literacy. However, there is no linking evidence that patients' with limited health literacy are completely unaware of their condition and treatment regime as they may seek information with the help of others like family, friends etc.

## Conclusion

In conclusion, relationship exists between fear avoidance behavior and disability secondary to LBP. People who are at risk of developing chronic disability can be identified using FABQ as a screening tool. There is a dearth of appropriate research defining the relationship between disability and health literacy in Saudi context. The study has few limitations. The cross-sectional design that did not permit assessment of the temporal relation of variables, the potential for social acceptability, bias of self-reported data, the potential for uncontrolled confounding, etc. The LBP population studied was not necessarily a representative of Saudi population as only literate women were included.

## Clinical Implications

In spite of the limitations, our findings have clinical implications that LBP disability results in greater fear avoidance and patients with limited health literacy is likely to have difficulty in self-man-

agement of back pain further leading to chronic disability. Allied health professionals should focus on these aspects while assessing disability due to low back pain.

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### Conflict of interest

The authors declare that they have no competing interests.

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