การสร้างแบบสอบถามความแตกฉานด้านสุขภาพเพื่อทำนายอาการปวดคอแบบไม่เจาะจง
ในคนทำงานสำนักงาน

นางกานต์ธีรา อารีรักษ์

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาวิทยาศาสตรดุษฎีบัณฑิต
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Development of a Health Literacy Questionnaire for Predicting Non-specific Neck Pain in Office Worker

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A Dissertation Submitted in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy Program in Physical Therapy
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Thesis Title	Development of a Health Literacy Questionnaire for Predicting Non-specific Neck Pain in Office Worker
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กานต์ธีรา อารีรักษ์ : การสร้างแบบสอบถามความแตกฉานด้านสุขภาพเพื่อทำนายอาการปวดคอแบบไม่เจาะจงในคนทำงานสำนักงาน (Development of a Health Literacy Questionnaire for Predicting Non-specific Neck Pain in Office Worker) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: ศ. ดร. ประวิตร เจนวรรธนะกุล, อ.ที่ปรึกษาวิทยานิพนธ์ร่วม: ศ. ดร. อัลลาร์ด ฟาน เดอ บีค, 205 หน้า.

งานวิจัยฉบับนี้มีวัตถุประสงค์เพื่อพัฒนาแบบสอบถามความฉลาดทางสุขภาพ เพื่อนำไปทำนายอาการปวดคอในพนักงานสำนักงาน โดยมีขั้นตอนการศึกษา 4 ขั้นตอน ประกอบด้วย 1) การทบทวนวรรณกรรมอย่างเป็นระบบ เพื่อศึกษาผลของการให้ความรู้ต่อการป้องกันและรักษาอาการปวดคอและหลัง 2) การพัฒนาและทดสอบคุณภาพแบบสอบถามความฉลาดทางสุขภาพเกี่ยวกับอาการปวดคอในพนักงานสำนักงาน 3) การทดสอบความสามารถในการทำนายการเกิดอาการปวดคอในพนักงานสำนักงาน ของแบบสอบถามความฉลาดทางสุขภาพ โดยมีการติดตามผลเป็นระยะเวลา 1 ปี และ 4) การทดสอบความสามารถในการทำนายการฟื้นตัวจากอาการปวดคอในพนักงานสำนักงาน ของแบบสอบถามความฉลาดทางสุขภาพ

ผลการศึกษาพบว่า การให้ความรู้ไม่มีผลต่อการป้องกันและรักษาอาการปวดคอและการรักษาอาการปวดหลัง อย่างไรก็ตาม พบว่าความรู้เรื่องหน้าที่ของกระดูกสันหลัง ความรู้เกี่ยวกับการทำกิจกรรมต่างๆ ในชีวิตประจำวัน และความรู้เกี่ยวกับแนวทางการปฏิบัติตนเมื่อเผชิญอาการปวดคอและหลัง มีผลต่อการป้องกันและรักษาอาการปวดคอและหลัง ในขั้นตอนการพัฒนาแบบสอบถามความฉลาดทางสุขภาพได้แบบสอบถามที่มีข้อคำถามทั้งหมด 6 ข้อ และมีคะแนนรวมอยู่ระหว่าง 0-24 คะแนน โดยแบบสอบถามมีคุณภาพที่ยอมรับได้และสามารถจำแนกพนักงานสำนักงานที่มีอาการปวดคอออกจากพนักงานสำนักงานที่ไม่มีอาการปวดคอได้ โดยแบบสอบถามมีค่าการทำนายการเกิดอาการปวดคอในระดับดี แต่ไม่สามารถทำนายการฟื้นตัวจากอาการปวดคอได้

ภาควิชา กายภาพบำบัด ลายมือชื่อนิสิต .....

สาขาวิชา กายภาพบำบัด ลายมือชื่อ อ.ที่ปรึกษาหลัก .....

ปีการศึกษา 2559 ลายมือชื่อ อ.ที่ปรึกษาร่วม .....

5576951237 : MAJOR PHYSICAL THERAPY

KEYWORDS: EDUCATION, NON- SPECIFIC NECK PAIN, QUESTIONNAIRE, PREDICTIVE VALIDITY, RECOVERY

KANTHEERA AREERAK: Development of a Health Literacy Questionnaire for Predicting Non- specific Neck Pain in Office Worker. ADVISOR: PROF. PRAWIT JANWANTANAKUL, Ph.D., CO-ADVISOR: PROF. ALLARD J. VAN DER BEEK, Ph.D., 205 pp.

The objective of this thesis was to develop a health literacy questionnaire for predicting non- specific neck pain in office workers. This thesis was divided into four stages: 1) systematic review of randomized control trials to gain insights into the effectiveness of education on the prevention and cure of non- specific neck and low back pain and to identify effective educational content to prevent and treat non-specific neck and low back pain; 2) the development of neck pain- specific health literacy questionnaire; 3) evaluation of the predictive validity of the neck pain-specific health literacy questionnaire; and 4) evaluation of the ability of neck pain- specific health literacy questionnaire to predict duration of recovery from non- specific neck pain in office workers.

The results showed that the education programs were not effective in preventing and treating neck pain as well as treating low back pain. Three education topics that may be effective in the prevention and treatment of neck and low back pain were identified, namely, function of the spine, information on activities, and information on coping with the problems. The neck pain- specific health literacy questionnaire comprised six questions, with total score ranging from 0 to 24. The questionnaire had acceptable psychometric properties and can differentiate between office workers with and without non- specific neck pain. The questionnaire had acceptable ability to predict incident non-specific neck pain, but was unable to predict duration of recovery from non-specific neck pain in office workers.

Department:	Physical Therapy	Student's Signature	.....
Field of Study:	Physical Therapy	Advisor's Signature	.....
Academic Year:	2016	Co-Advisor's Signature	.....

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This thesis is dedicated with deepest love and affection to my family. It might be stressful to complete the study without them. Their love, encouragement, and understanding have inspired me to be the best I can do. Lastly, I hope this thesis is the best thing that represents my thankfulness to all them.

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CHAPTER 1
General Introduction

1.1 Outline of this thesis

The thesis consists of seven chapters. The first chapter provides an overview of the study consisting of background and rationale, objectives, scopes, and benefits of the study. The second chapter is a review of related literature. The third chapter is a meta-analysis of the effect of education on non-specific neck and low back pain. The fourth chapter describes the process of development of health literacy questionnaire. A field-testing of the health literacy questionnaire for psychometric properties is described. The fifth chapter describes the predictive validity of health literacy questionnaire in office workers during a one-year follow-up. The sixth chapter presents the study to evaluate whether the NHLOW can predict duration of recovery from non-specific neck pain in office workers. The last chapter provides general conclusion, which consists of a summary of the results and limitations of the study as well as suggestions for further study.

1.2 Background and rationale

Neck pain is common among office workers (Côté et al., 2009). Previous studies showed that 42%-69% of office workers experienced neck pain in the preceeding 12

months (De Loose et al., 2008;Janwantanakul et al., 2008) and 34%-49% reported a new onset of neck pain every year (Korhonen et al., 2003;Hush et al., 2009). Neck pain is viewed as an episodic occurrence over a lifetime with variable recovery between episodes (Guzman et al., 2009). In a working population, 60% to 80% of workers with neck pain report neck pain 1 year later (Carroll et al., 2009). Consequently, neck pain leads to a great socio-economic burden on both patients and society (Borghouts et al., 1999;Côté et al., 2009). In the Netherlands, the total cost of neck pain in 1996 was estimated at 686 million US dollars and there was productivity loss involved sickness absence in 32% of office workers with neck/shoulder symptoms in 2004 (Borghouts et al., 1999;van den Heuvel et al., 2007). In Thailand, the cost of neck pain among office workers in 2006 was approximately 198 million US dollars per year (Janwantanakul et al., 2005).

One effective management for musculoskeletal disorders (MSDs) is self-management based on the biopsycosocial model (Briggs et al., 2010;Briggs et al., 2011). The model is widely accepted for the development of chronic MSDs (Ferrari and Russell, 2003). Self-management requires patients to have adequate health literacy, which is an individual's ability to seek, understand, and utilize health information, in order to make judgments and take decision for concern health care, disease prevention, and health promotion to maintain and improve quality of life (Gong et al., 2007;Jordan et al., 2008). Sub-optimal health literacy in patients with chronic conditions, such as asthma, diabetes, and rheumatoid arthritis, has been found to

associate with poorer health conditions, knowledge, and limited self-management skills (Williams et al., 1995;Briggs et al., 2010;Briggs et al., 2011). Health literacy, therefore, has important implications for health programs and health service delivery models, particularly in the context of management of chronic health conditions (Briggs et al., 2010;Briggs et al., 2011).

Presently, available tools to measure health literacy, such as the Rapid Estimate of Adult Literacy in Medicine (REALM), Test of Functional Health Literacy in Adults (TOFHLA), Short Test of Functional Health Literacy in Adults (S-TOFHLA), Newest Vital Sign (NVS), solely evaluate an individual's reading ability and vocabulary. These tools do not capture all aspects of the concept and definition of health literacy.Also, they have been developed for general population, not for specific groups of patients (Martin et al., 2009;Sorensen et al., 2012). The prevention and management of a disease must be specific for individual conditions, because the cause and risk factors attributed to individual conditions are different. Hence, the knowledge for making judgments and taking decision regarding healthcare and disease prevention must have specific context to individual conditions. For example, Gong et al (2007) and Sabbahi et al (2009) demonstrated that TOFHLA did not associate with oral health outcomes (i.e. Oral Health Impact Profile, Oral Health-Related Quality of Life), because the tool did not measure oral health domain. -Later on, the authors specifically developed a tool to measure oral health literacy, which consequently can predict level of oral health literacy and associated with oral health outcomes better than the TOFHLA (Gong et

al., 2007;Sabbahi et al., 2009). Ishikawa (2008) had developed an instrument to assess communicative and critical health literacy among Japanese office workers for health promotion at workplace. However, this study only focused on one part of health literacy, not all components of health literacy, i.e. utilizes health information in order to make judgments and take decision for concern health care, disease prevention, and health promotion to maintain and improve quality of life (Ishikawa et al., 2008). To our knowledge, no health literacy questionnaire to identify those at risk of developing non-specific neck pain has been established.

1.3 Objective of the study

1.3.1 To systematically review the literature to gain insights into the effectiveness of education on the prevention and cure of non-specific neck and low back pain and to identify effective educational content to prevent and treat non-specific neck and low back pain.

1.3.2 To identify domains of health literacy associated with the development of non-specific neck pain in office workers and to develop a neck pain specific-health literacy questionnaire for office workers.

1.3.3 To evaluate the predictive validity of the neck pain-specific health literacy for office workers (NHLOW) questionnaire on non-specific neck pain in office workers during a one-year follow-up and to compare the

predictive validity of the NHLOW to the validity of the neck pain risk score for office workers (NROW) and a combination of NHLOW and NROW.

1.3.4 to explore the duration of recovery from non-specific neck pain and to evaluate whether the NHLOW can predict duration of recovery from non-specific neck pain.

1.4 Scope of the study

Apart from conducting a systematic review, the in-depth interview was conducted in professors, physical therapists, office workers with and without non-specific neck pain to identify domains of health literacy associated with the development of non-specific neck pain in office workers. The results were then used to develop a neck pain specific-health literacy questionnaire for office workers and determine psychometric properties of the questionnaire. A prospective cohort study with 12-month follow up was conducted in a convenience sample of office workers. Participants were recruited from 10 large-scale enterprises in Bangkok. Those who expressed interest and were eligible were invited to complete a self-administered questionnaire and a neck pain specific-health literacy questionnaire. The primary outcome measures were the 1-year incidence of non-specific neck pain and the secondary outcome measures were pain intensity and disability level. The incidence of non-specific neck pain was collected by using a diary. Participants were followed until they became symptomatic, withdrew from the study, or completed the 12-month follow up. The researcher returned to collect the diary from participants every month over a 12-month period. Those who reported incidence of non-specific neck pain were asked about their disability level.

1.5 Benefits of the study

First, the questionnaire provides information about individuals' risk of developing neck pain, which will guide health professionals and individuals in joint decisions on disease prevention. Identification of persons at risk would also mean the enhancement of resource allocation to those most in need and most likely to benefit from it. Without a questionnaire as a screening tool, a large number of people would receive intervention, which is likely to compromise its effectiveness. Second, due to their low cost, a questionnaire can be used at a population level. Last, a health literacy questionnaire provides a guideline of patient education relating to neck pain, which persons should acquire to prevent neck pain.

CHAPTER 2
Review of related literature

2.1 Pathomechanism of MSDs

The possible pathways which involve the development of MSDs relate to the cumulative nature of internal forces acting upon body tissue (termed a dose) (Figure 2.1). The dose causes a response by the body, such as increased blood circulation, local muscle fatigue and other various responses of physiology and biomechanical nature. The response may increase or decrease the ability to cope with further responses (Armstrong et al., 1993). If there is insufficient time to allow regeneration of body tissue capacity then a series of responses may further reduce the available capacity. This cumulative cycle may continue until some type of structural tissue deformation occurs (e.g. pain, swelling, limited movement) (Buckle and Jason Devereux, 2002;Punnett and Wegman, 2004).

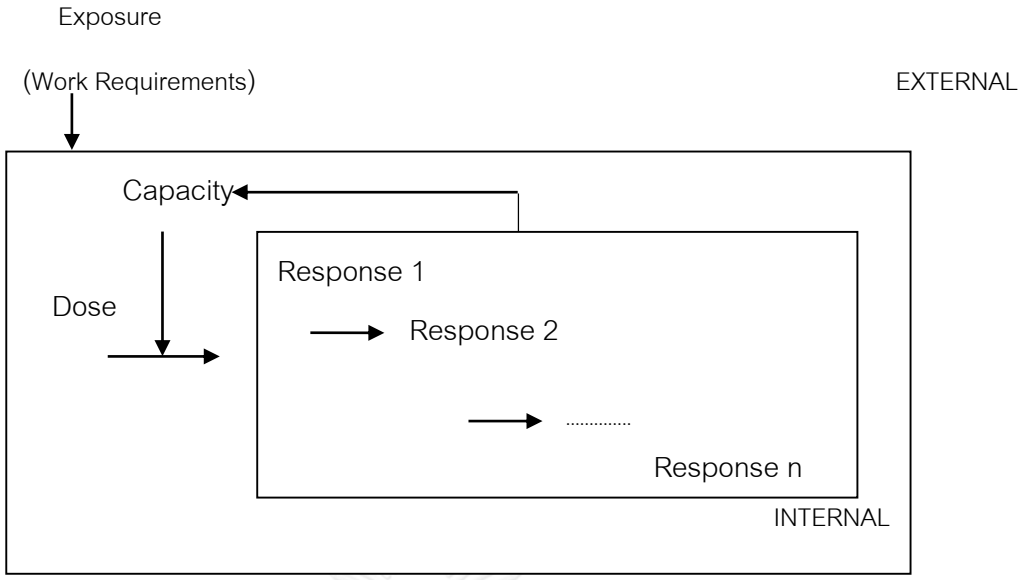


Figure 2.1 A conceptual model of musculoskeletal disorders that describes the pathways involved in the pathogenesis of these injuries (Armstrong et al., 1993).

For the state of chronic MSDs, persisting pain and its accompanying behaviors should preferably be viewed from a psychological or even social standpoint, rather than purely focusing on the pathophysiological mechanisms that underlying musculoskeletal symptoms (Staal et al., 2007). Biopsychosocial model is now widely accepted as the model for the development of chronic musculoskeletal disorder. There is extensive clinical evidence that symptoms and illness may originate from a health condition, but the incidence and development of chronicity and disability often depends on psychosocial factors (Andersson, 1999;Ferrari and Russell, 2003;Côté et al., 2009). There is now broad agreement that human illness and disability associated with non-specific musculoskeletal conditions can only be understood and managed according to a biopsychosocial model (Waddell, 2004) (Figure. 2.2).

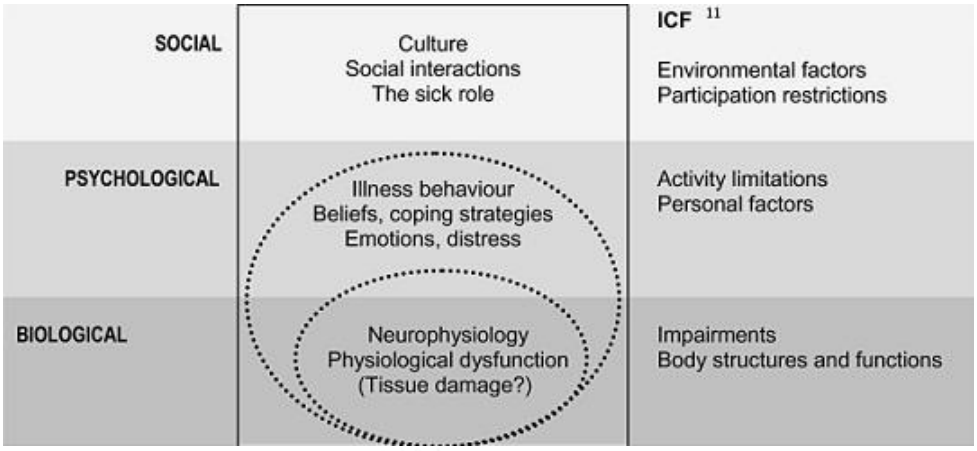
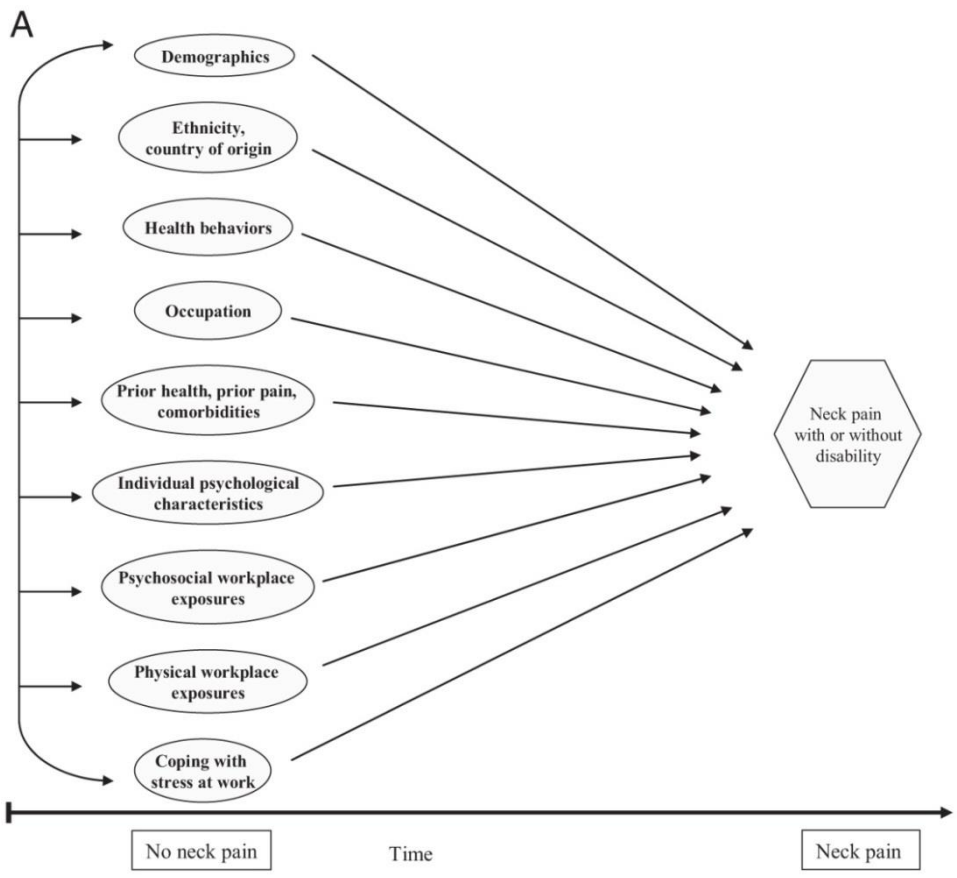


Figure 2.2 A biopsychosocial model (Waddell, 2004).

2.2 Pathomechanism of neck pain

Evidence suggests that neck pain in workers is non-traumatic and its etiology is multifactorial. Côté et al (2009) proposed the possible causal pathways for predicting neck pain and disability in workers (Figure 2.3). Neck pain is likely caused by multiple serial exposures rather than by the direct effect of a single exposure. Côté et al (2009) classified risk factors into 2 types 1) risk factors inherent to the workers (i.e. demographic, ethnicity, country of origin, health behaviors, occupation, general health, prior pain and individual psychological factors) and 2) risk factors related to the workplace (i.e. psychosocial workplace exposures, physical workplace exposures and coping with stress at work). Risk factors inherent to the worker can have a direct effect on the development of neck pain with or without functional limitations. Risk factors inherent to the worker can also have indirect effects on neck pain that are mediated

through the risk factors related to the workplace. Moreover, each risk factor can influence one another. For example, a worker's physical health, mental health and occupation are influenced by her/his demographic, ethnic and cultural characteristics. Also, risk factors related to the workplace can modify the direct effects of other workplace-related risk factors. Finally, the effects of risk factors related to the workplace on neck pain are likely mediated by how workers cope with the ensuing workplace stress.



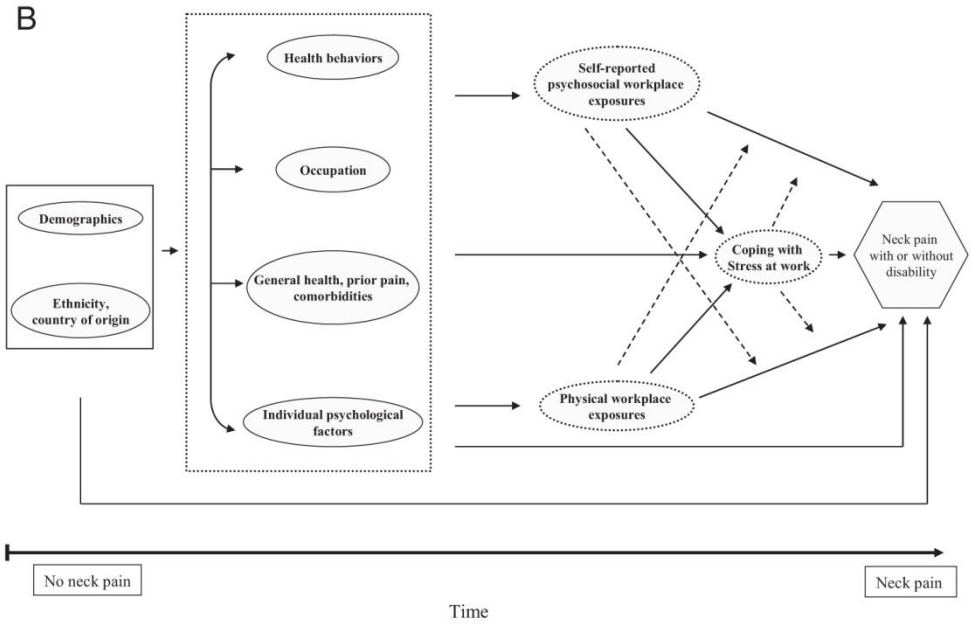


Figure 2.3 (A) diagram show the associations between risk factors and neck pain. Ovals represent risk factor 'domains'. The hexagon represents the main outcome. Solid arrows represent an association between a risk factor domain and an outcome. The curved arrows illustrate that risk factor domains are correlated. (B) Etiological diagram integrating mediation and effect modification. Ovals represent risk factor 'domains'. Boxes group risk factors that are associated with the outcome at the same point in time. The hexagon represents the main outcome. Dashed boxes and dashed ovals represent mediators between antecedent risk factors and the outcome. Solid arrows represent the association between a risk factor domain and an outcome. Curved arrows illustrate that risk factor domains are correlated. Dashed arrows illustrate that effect modification exists between risk factors and an outcome (Côté et al., 2009)

2.3 Health literacy

Literacy generally means the ability to read and write, which is basic skills needed to understand and communicate information. However, health literacy

requires some additional skills, including the ability to find, evaluate, and integrate health information from a variety of contexts (Peerson and Saunders, 2009;World Health Organization, 2009). The World Health Organization (WHO) points out that health literacy implies the achievement of a level of knowledge, personal skills, and confidence to take action to improve personal and community health by changing personal lifestyles and living conditions. By improving people's access to health information, and their capacity to use it effectively, health literacy is critical to empowerment (Nutbeam, 1998;World Health Organization, 1998b)

"Health literacy is the personal, cognitive, and social skills which determine the motivation and ability of individuals to gain access to, understand, and use information to promote and maintain good health" (Nutbeam, 2008).

Health literacy is linked to literacy and entails people's knowledge, motivation and competences to access, understand, appraise, and apply health information in order to make judgments and take decisions in everyday life concerning healthcare, disease prevention and health promotion to maintain or improve quality of life during the life course. This definition encompasses the public health perspective and can easily be specified to accommodate an individual approach by substituting the three domains of health: "healthcare, disease prevention and health promotion" with "being ill, being at risk and staying healthy" (Sorensen et al., 2012).

2.4 Models of health literacy

The model of health literacy combines the qualities of a conceptual model outlining the main dimensions of health literacy (represented in the concentric oval shape), and of the factors which impact on health literacy (represented in left side of model), as well as the pathways linking health literacy to health outcomes (Figure 2.4). The core of the model shows the main competencies necessary to be considered health literate, which composes of (1) 'access' refers to the ability to seek, find and obtain health information; (2) 'understand' refers to the ability to comprehend health information; (3) 'appraise' describes the ability to interpret, filter, judge and evaluate health information and (4) 'apply' refers to the ability to communicate and use the information to maintain and improve health. This model generates knowledge and skills, which enable a person to navigate three domains of the health: healthcare, disease prevention, and health promotion (Sorensen et al., 2012) (Table 2.1).

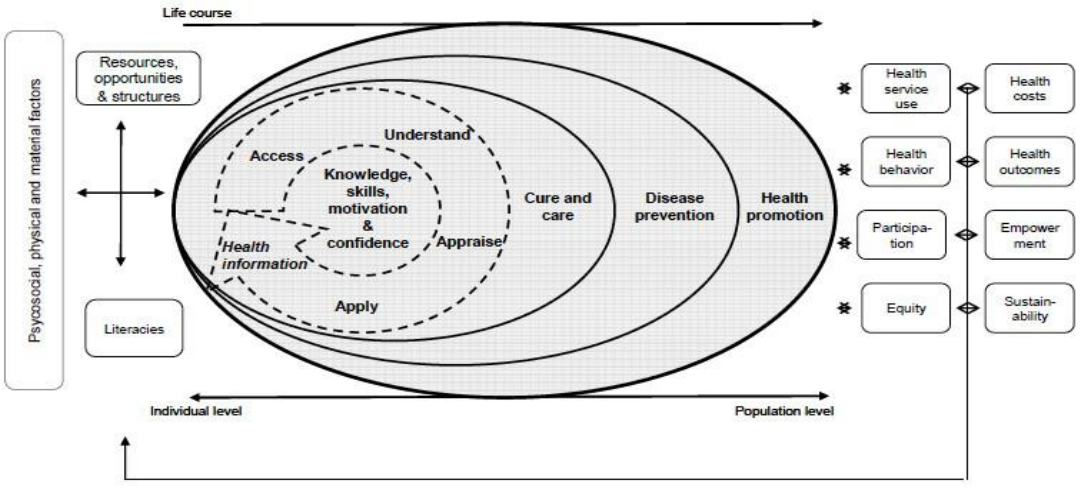


Figure 2.4 Model of health literacy (Sorensen et al., 2012).

Table 2.1 *The four dimensions of health literacy applied to three health domains (Sorensen et al., 2012).*

	Access information	**Understand information**	**Appraise information**	**Apply information**
Healthcare	Ability to access information on medical or clinical issues	Ability to understand medical information and derive meaning	Ability to interpret and evaluate meical information	Ability to make informed decisions on medical issues

	Access information	**Understand information**	**Appraise information**	**Apply information**
Disease prevention	Ability to access information on risk factors for health	Ability to understand information on risk factors and derive meaning	Ability to interpret and evaluate information on risk factors for health	Ability to make informed decisions on risk factors for health
Health promotion	Ability to update oneself on determinants of health in the social and physical environment	Ability to understand information and determinants of health in the social and physical environment and derive meaning	Ability to interpret and evaluate information on health determinants in the social and physical environmental	Ability to make informed decisions on health determinants in the social and physical environmental

In addition, Nutbeam (2008) describes two models of health literacy:

- the risk model emphasizing the importance of communication and health service organization that is tailored to the needs of low literate individuals
- the asset model where health literacy is described as an asset to be developed, and seen as an outcome of health education and communication that support greater empowerment in health decision-making (Figure 2.5, 2.6).

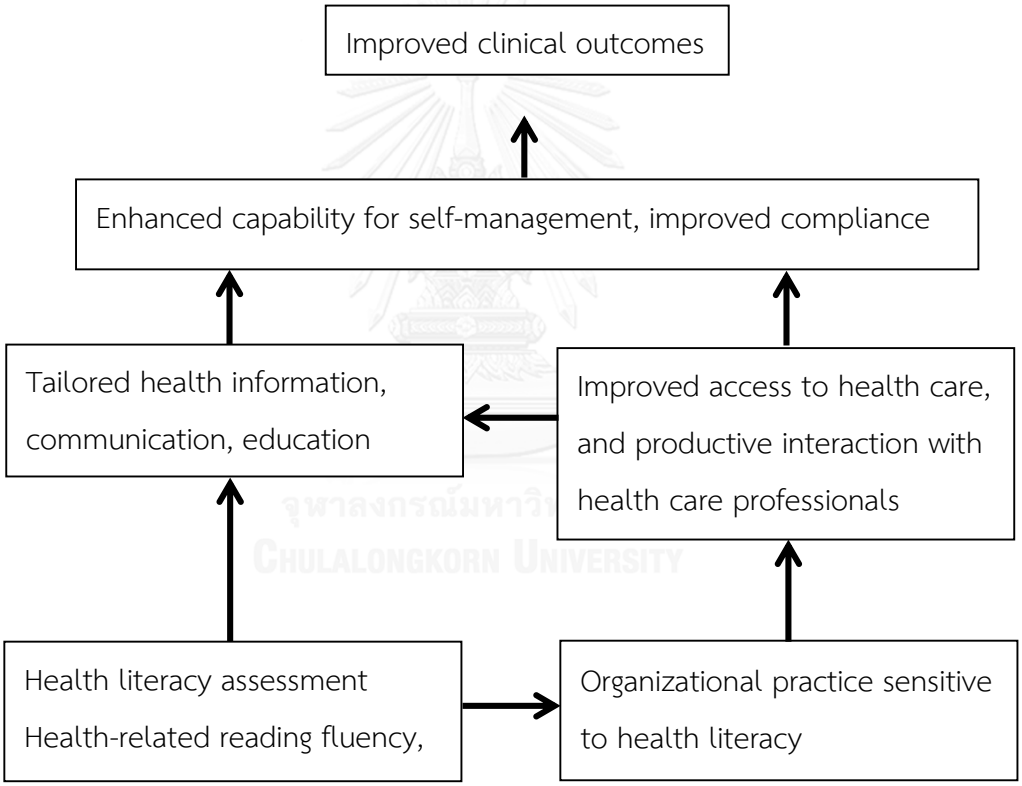


Figure 2.5 Conceptual model of health literacy as a risk (Nutbeam, 2008).

From the conceptual health literacy models of Sorensen et al (2012) and Nutbeam (2008), the health literacy can improve health knowledge and understanding of health, which consequently positively influence self-management and decision

making to change health behaviors or living condition (Nutbeam, 2008;Sorensen et al., 2012). Currently, several studies which investigated the relationship between health literacy and health outcome found that people with adequate health literacy have better health status than those with limited health literacy. On the other hand, people with low health literacy has been associated with less knowledge about disease prevention, poor self- management, limited involvement in health care consultations and decision making process, more emergency department use, and more hospital admissions (Nutbeam, 2008;Sorensen et al., 2012).

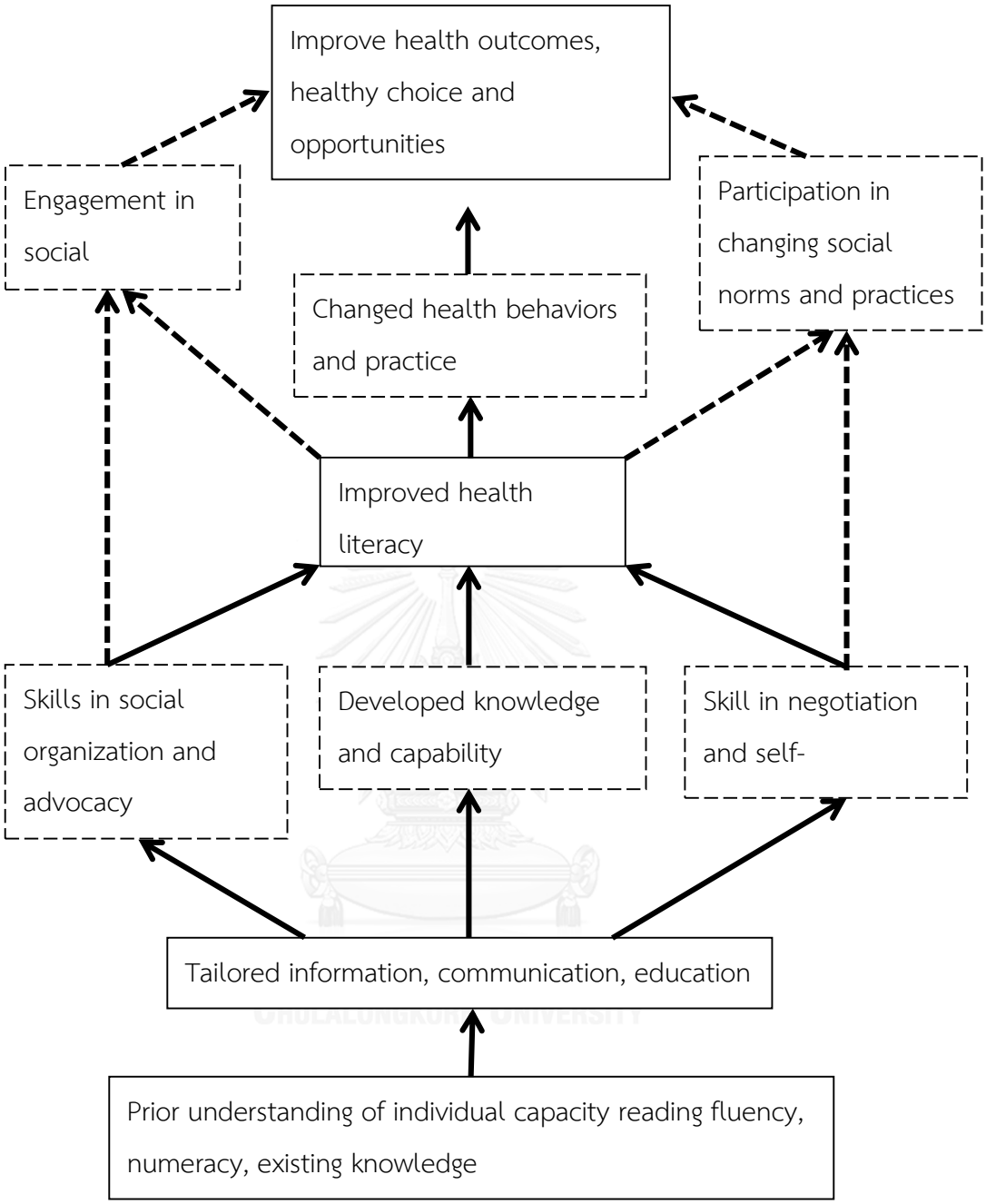


Figure 2.6 Conceptual model of health literacy as an asset (Nutbeam, 2008).

2.5 Level of health literacy

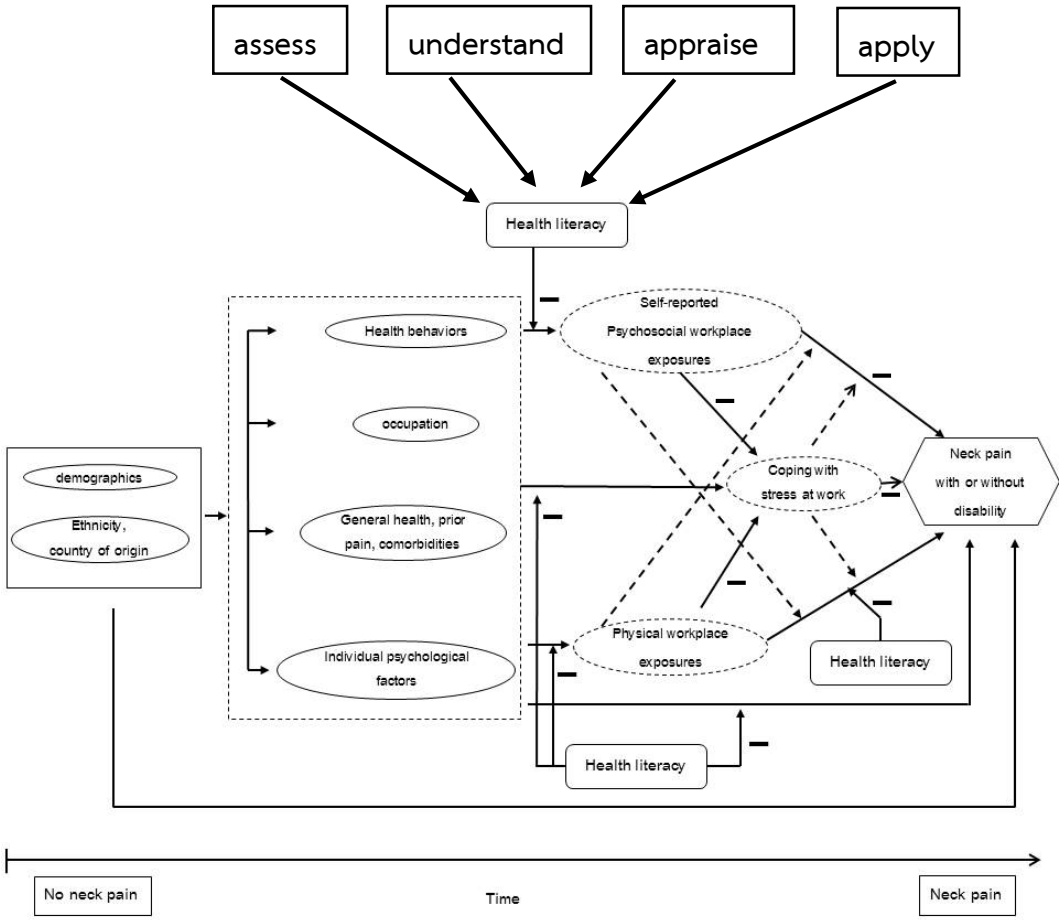
Health literacy can divide into three levels (Nutbeam, 2008);

- Functional health literacy refers to the basic skills in reading, writing, and capacity to apply these skills in everyday situations.
- Interactive health literacy refers to communicative and social skills that can be used to derive meaning from different forms of communication, and to apply new information to changing circumstances.
- Critical health literacy refers to higher level cognitive skills and social skills required to critically analyze information, and to use this information to exert greater control over life events and situations through individual and collective action to address the social, economic, and environmental determinants of health.

2.6 Health literacy measurement

A currently available tool to measure health literacy, such as the Rapid Estimate of Adult Literacy in Medicine (REALM), Test of Functional Health Literacy in Adults (TOFHLA), Short Test of Functional Health Literacy in Adults (S-TOFHLA), or Newest Vital Sign (NVS), assess an individual's reading ability and vocabulary, but they do not capture all aspects of the concept and definition of health literacy, including health promotion, disease prevention, and health care. Moreover, these tools have been developed for general population, not for specific groups of patients (Martin et al., 2009;Sorensen et al., 2012). Since the cause and risk factors attributed to individual conditions are different, disease prevention and management must be specific to individual conditions. The knowledge for making judgments regarding healthcare and disease prevention must have specific context to individual conditions (Sorensen et al., 2012).

2.7 Conceptual framework



CHAPTER 3

Effect of education on non-specific neck and low back pain: A meta-analysis of randomized controlled trials

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Abstract

Background: Neck and low back pain are significant health problems due to their high prevalence among the general population. Educational intervention commonly aims to reduce the symptoms and risk for additional problems by increasing the participant's knowledge, which in turn will alter the person's behavior. The primary aim of this study was to review randomize controlled trials (RCTs) to gain insights into the effectiveness of education for the prevention and treatment of non-specific neck and low back pain.

Methods: Publications were systematically searched from 1982 to March 2015 in several databases. Relevant RCTs were retrieved and assessed for methodological quality. Meta-analysis was conducted to examine the effectiveness of education for the prevention and treatment of non-specific neck and low back pain. The overall quality of evidence was assessed using the GRADE system.

Results: Thirty-six RCTs (30 high-quality studies) were identified. A total of 15 RCTs, which compared education programs to no education program, were included for further analysis. All studies included investigated the effectiveness of education with intermediate- and long-term follow-ups. The results showed that education programs were not effective in preventing and treating neck pain as well as treating low back pain. Conflicting evidence was found for the effectiveness of education on prevention of low back pain.

Conclusions: Evidence suggests that education programs are not recommended in preventing or treating neck pain as well as treating low back pain (for long-term effect only), unless supplementary high-quality studies provide evidence to the contrary.

Key words: Education, Spinal pain, Musculoskeletal disorders

Introduction

Neck and low back pain are significant health problems due to their high prevalence among the general population (Walker, 2000;Croft et al., 2001). One-year prevalence rates for neck pain range between 20% and 40% and lifetime prevalence of neck pain is 14% up to 71% (Fejer et al., 2006;Côté et al., 2009). For low back pain, one-year prevalence rates range from 22% to 65%, while estimates for lifetime prevalence range from 11% up to 84% (Walker, 2000).

The World Health Organization (1998a, 1998b) defines therapeutic patient education as education that helps patients to learn and to develop many competencies as well as to adapt behaviors leading to the improvement of health (World Health Organization, 1998a;World Health Organization, 1998b). Education is recommended as an important component of neck and low back pain care (Gross et al., 2009;Koes et al., 2010), which commonly aims to reduce the symptoms and risk for additional problems by increasing the participant's knowledge, which in turn will alter the person's behavior (Linton and van Tulder, 2001;Haines et al., 2009).

A number of systematic reviews have been conducted to evaluate the effectiveness of education aiming to prevent or alleviate neck or low back pain; however, the findings are still controversial (Leclaire et al., 1996;van Poppel et al., 2004;Ribeiro et al., 2008;Tavafian et al., 2008;Sahin et al., 2011). For example, Haines et al. (2009) found educational interventions to have no effect on reducing pain intensity, decreasing disability, or improving the quality of life in neck pain patients

with various pathologies. However, Heymans et al. (2005) found moderate evidence supporting the effectiveness of back schools for patients with chronic and recurrent low back pain (Heymans et al., 2005). The primary aim of this study was to systematically review randomized controlled trials to gain insights into the effectiveness of education on the prevention and cure of non-specific neck and low back pain. The secondary aim was to identify effective educational content to prevent and treat nonspecific neck and low back pain.

Methods

Search strategy

Online searches were conducted on PubMed, CINAHL Plus with full text, The Cochrane Library, ScienceDirect, PEDro, ProQuest, and Scopus databases from 1982eMarch 2015 using the following keywords: neck or low back pain paired with education, selfmanagement, prevention, or treatment. The search and full inclusion process was performed by one reviewer (KA). After the inclusion of articles based on the selection criteria, references were searched for additional articles.

Selection of studies

The selection criteria of relevant articles were:

(1) The study design was a randomized controlled trial (RCT) that used education as an intervention and had follow-up.

(2) The article was a full report published in English. Letters, abstracts, books, conference proceedings, and posters were excluded.

(3) Neck and/or low back painwas assessed in the study. Studies on neck and low back pain due to specific underlying pathology, such as tumors, fractures, infection, dislocation, whiplash-associated disorder, and osteoporosis were excluded.

Quality assessment of studies

The articles were evaluated for methodological quality by two reviewers (KA and ES) using the PEDro scale, which contains 11 yes/no items (Maher et al., 2003). A high-quality study was defined as scoring positive in at least 50% (5/10) of the items. Disagreements between the reviewers were discussed in an attempt to achieve consensus. If agreement could not be reached, a third reviewer (PJ) was consulted to achieve a final judgment. If a study had already been rated according to the PEDro scale and its score confirmed on the Physiotherapy Evidence Database (www.pedro.org.au), this score was used in the present study (Machado et al., 2006).

Data extraction

Data extraction was performed by two reviewers (KA and ES). The reviewers independently extracted the data using a standardized form, including characteristics of participants, intervention parameters, outcomes, and results. The consensus method was used to resolve disagreements between the two reviewers.

Data analysis

Only studies which compared education programs to no education program were included for analysis of the effectiveness of education on the prevention and cure of non-specific neck and low back pain. The primary outcomes for prevention

were prevalence and incidence of diseases. The secondary outcomes for prevention were fear-avoidance beliefs, quality of life, and work-limitations. The primary outcomes for treatment were pain and disability. The secondary outcomes for treatment were fear-avoidance beliefs, quality of life, and work-absenteeism. The effects of education on outcomes were divided into three groups: short-term (less than 3 months), intermediate-term (between 3 and 12 months), and long term effects (12 months or more).

For each study, any finding was classified as positive if an education program was demonstrated to be statistically more effective than no education program in at least one primary/secondary outcome. Any finding was classified as negative if an education program was demonstrated to be statistically less effective than no education program in at least one primary/secondary outcome. A neutral rating (no effect)was classified if the education program did not statistically differ from no education program in any primary/secondary outcomes (Linton and van Tulder, 2001).

Studies that used the same tools for outcome assessment were compared using the mean difference (MD) and 95% of the confidence intervals (CI) to allow for direct comparison of the results. If studies used different measurement tools for the same outcome, the standardized mean difference (SMD) and 95% of the CI was calculated using random-effect models. The relative risk (RR) was calculated using a random-effect model for dichotomous data. Assessment of clinical relevance was made using the recommendations of the Cochrane Back Review Group (CBRG). A small

effect was defined as MD less than 0.1, SMD less than 0.5, and RR greater than 0.8. A medium effect was defined as MD from 0.1 to 0.2, SMD from 0.5 to 0.8, and RR from 0.5 to 0.8. A large effect was defined as MD > 0.2, SMD >0.8, and RR < 0.5 (Furlan et al., 2009). The heterogeneity of the studies was evaluated by the I2 statistic. The Cochrane Collaboration provides the following interpretation of I2: 0%–30%, might not be important; 30%–60%, may represent moderate heterogeneity; 50%–90% and 75%–100%, may represent substantial and considerable heterogeneity, respectively. Funnel plots of the trial's SMD were evaluated and asymmetry in a funnel plot indicates possible non-publication of small trials with negative result. If SDs for outcome were not reported at all, they were estimated using the mean SD weighted by the relevant treatment group's sample size across all other trials that reported SDs for the same outcome (www.cochrane-handbook.org). All statistical analysis was performed using the Review Manager (RevMan5.3). Forest plots were generated to present the pooled estimates where there were two or more RCTs of sufficient clinical and statistical data.

If data did not qualify for meta-analysis (i.e. having only a single study or no report of MD and SD of the outcomes), the effectiveness of education was reported in the qualitative analysis and the estimated effect was reported with the information provided in the studies. If the 95% CI for RR contained 1, the effectiveness of education was not statistically significant at the 0.05 level. If the 95% CI for MD contained 0, the effectiveness of education was not statistically significant at the 0.05 level. If the p-

value was more than 0.05, the effectiveness of education was not statistically significant.

The GRADE (Grades of Recommendation, Assessment, Development and Evaluation) approach was used to evaluate the overall quality of the evidence and the strength of the recommendations (Furlan et al., 2009). Five domains of quality were rated for each comparison: (1) limitations of study design; (2) inconsistency; (3) indirectness; (4) imprecision; (5) publication bias across all trials (Furlan et al., 2009;Guyatt et al., 2011;Michaleff et al., 2014;Vanti et al., 2015). A four-point rating scale ranging from ‘high quality’ on one end to ‘very low quality’ on the other was employed. The quality of the summary of findings was rated as moderate if one, low if two, and very low if three of the criteria were not met. The following definitions of quality of evidence were applied (Guyatt et al., 2008):

- high quality e further research is very unlikely to change our confidence in the estimated effect,
- moderate quality e further research is likely to have an important impact on our confidence in the estimated effect and may change the estimate,
- low quality e further research is very likely to have an important impact on our confidence in the estimated effect and is likely to change the estimate,
- very low quality e we are very uncertain about the estimate.

Sensitivity analysis

Sensitivity analysis was conducted to assess how sensitive the results of the review were in relation to the way it was performed. For the results of meta-analysis, initially, the effect of the cut-off point used in the methodological quality assessment for qualification as a high quality study on the synthesized results was assessed by shifting the cut-off point from ≥50 to ≥60%, or shifting the cut-off point from ≥50 to ≥70%. The effect of the inclusion of low quality studies on the synthesized results was then assessed by repeating the analysis using only high-quality studies.

For the results of qualitative analysis (using the GRADE approach), the effect of the cut-off point used in the methodological quality assessment for qualification as a high quality study on the synthesized results was assessed by shifting the cut-off point from ≥50 to ≥60%, or shifting the cut-off point from ≥50 to ≥70%.

Results

Search strategy

A total of 36 articles were judged to meet the selection criteria (Fig. 3.1). All 36 articles were assessed for methodological quality and data extraction.

Methodological quality assessment

The scoring of both reviewers before discussion had an agreement rate of 84% (74/88). The overall inter-rater agreement resulted in kappa = 0.67 with a standard error of measurement of 0.25. After discussion, the two reviewers reached full consensus (100%; 88/88). The scores for the methodological quality of the studies ranged from 1 to 8 points (Table 3.1). The median score was 6 points (60%). Thirty studies were rated as high-quality studies with a median quality score of 6 (60%). Six studies were rated as low-quality studies with a median quality score of 3 (30%). All but one study (Burton et al., 1999) was rated negative for items 5 (blinding of all participants) and 6 (blinding of all therapists). Twenty of 36 studies were rated as negative for items 7 (blinding of all assessors) and 9 (intention to treat analysis).

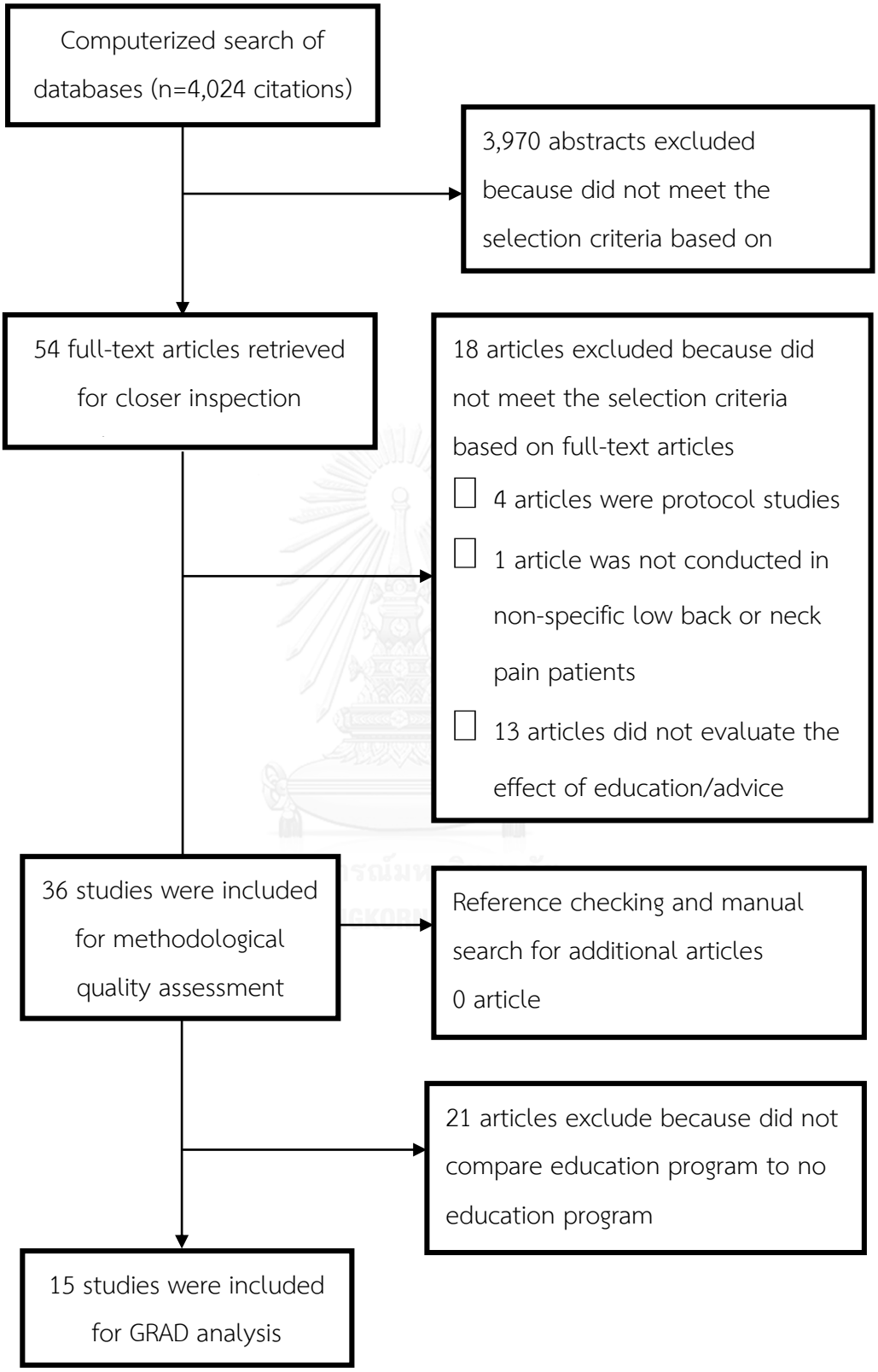


Figure 3.1 Flow diagram of the searching and screening process

Table 3.1 Methodological quality score of the 36 included studies

Authors	Scores on PEDro scale											Total score	Quality of study
	1	2	3	4	5	6	7	8	9	10	11		
Anderson et al (2011)	+	+	+	+	−	−	+	+	+	+	+	8/10	High
Burton et al (1999)	+	+	+	+	+	+	+	−	−	+	+	8/10	High
Cherkin et al (1998)	+	+	+	+	−	−	+	+	+	+	+	8/10	High
Heymans et al (2006)	+	+	+	+	−	−	+	+	+	+	+	8/10	High
Hsieh et al (2002)	+	+	+	+	−	−	+	+	+	+	+	8/10	High
Sherman et al (2005)	+	+	+	+	−	−	+	+	+	+	+	8/10	High
Pires et al (2014)	+	+	+	+	−	−	+	+	+	+	+	8/10	High
Cherkin et al (2001)	+	+	−	+	−	−	+	+	+	+	+	7/10	High
Leclaire et al (1996)	+	+	−	+	−	−	+	+	+	+	+	7/10	High
Ribeiro et al (2008)	+	+	+	+	−	−	+	+	−	+	+	7/10	High
Sahin et al (2011)	+	+	+	+	−	−	+	+	−	+	+	7/10	High

Authors	Scores on PEDro scale											Total score	Quality of study
	1	2	3	4	5	6	7	8	9	10	11		
Sherman et al (2009)	+	+	+	+	–	–	–	+	+	+	+	7/10	High
van Poppel et al (1998)	+	+	+	+	–	–	–	+	+	+	+	7/10	High
Cecchi et al (2010)	+	+	+	+	–	–	–	+	–	+	+	6/10	High
Cherkin et al (1996)	+	+	–	+	–	–	+	+	–	+	+	6/10	High
George et al (2011)	+	+	+	+	–	–	+	+	–	+	–	6/10	High
Glomsrød et al (2001)	+	+	–	+	–	–	–	+	+	+	+	6/10	High
Little et al (2001)	+	+	+	+	–	–	+	–	–	+	+	6/10	High
Mayer et al (2005)	+	+	–	+	–	–	–	+	+	+	+	6/10	High
Meng et al (2011)	+	+	+	+	–	–	–	+	–	+	+	6/10	High
Moffett et al (2005)	+	+	+	–	–	–	+	–	+	+	+	6/10	High
Moffett et al (2006)	+	+	+	+	–	–	–	–	+	+	+	6/10	High
Morone et al (2011)	+	+	+	–	–	–	+	+	–	+	+	6/10	High
Moseley et al (2004)	+	+	+	+	–	–	–	+	–	+	+	6/10	High

Authors	Scores on PEDro scale											Total score	Quality of study
	1	2	3	4	5	6	7	8	9	10	11		
Sorensen et al (2010)	+	+	+	+	–	–	–	+	–	+	+	6/10	High
Tavafian et al (2008)	+	+	–	+	–	–	–	+	+	+	+	6/10	High
Geldhof et al (2007)	+	+	–	+	–	–	–	–	+	+	+	5/10	High
Kamwendo and Linton (1991)	+	+	–	+	–	–	–	+	–	+	+	5/10	High
Santos et al (2011)	+	+	–	+	–	–	–	+	–	+	+	5/10	High
Vidal et al (2013)	+	+	–	+	–	–	–	+	–	+	+	5/10	High
Derebery et al (2009)	+	+	–	+	–	–	–	–	–	+	+	4/10	Low
Kovacs et al (2007)	+	+	+	–	–	–	–	+	–	–	+	4/10	Low
Cardon et al (2007)	+	+	–	–	–	–	–	–	–	+	+	3/10	Low
Dolphens et al (2011)	+	+	–	–	–	–	–	–	–	+	+	3/10	Low
Roland and Dixon (1989)	+	+	–	–	–	–	–	–	–	+	+	3/10	Low
Daltroy et al (1997)	+	+	–	–	–	–	–	–	–	–	–	1/10	Low
Positive (%)	**100**	**100**	**58**	**81**	**3**	**3**	**44**	**72**	**44**	**94**	**94**		

Study characteristics

Twenty-two studies examined low back pain patients and five studies reported on neck pain patients. Only one study examined both neck and low back pain (Moffett et al., 2006). The remaining eight studies were conducted on healthy subjects (Table 3.2).

Eighteen studies assessed outcomes for 12 months or longer. Fifteen studies had follow-up periods ranging from 3 to 6 months, while the remaining three studies had follow-up durations of less than 3 months (Little. et al., 2001;Mayer et al., 2005;Andersen et al., 2011).

Of 36 studies, only 15 compared education programs to no education program. Six studies compared education programs to non-specific education programs. The remaining 15 studies compared education programs to other interventions. Consequently, these 21 studies were excluded from further analysis because the effect of education could not be extracted from them. Of 15 studies, six studies showed a positive effect of education and nine studies reported no effect of education.

The educational content of the 15 studies included was classified into 13 topics under three headings (Table 3.3). The educational content most frequently included in the studies was anatomy (85%), exercise (64%), and pathophysiology (64%). The educational content mainly associated with differences between positive and no-effect studies comprised function of the spine (40%), information of activity (23%), and information on coping with the problems (15%) (Fig. 2) (Tables 3.4 and 3.5).

Risk of bias across studies

Analysis of funnel plots suggested low publication bias in both the synthesis of prevention and treatment of non-specific neck and low back pain

Table 3.2 Characteristics and results of the 15 included studies

Author	Study design (follow-up period)	Study population	Interventions	Outcome	Result
Cardon et al	RCT (17-18 months)	365 4th-5th grade elementary schoolchildren, 289 boys and 314 girls	I: back care C: no intervention	FABQ score Prevalence	I vs C = + I vs C = 0
Daltroy et al	RCT (5.5 years)	3,597 postal workers	I: standard postal service training in back-injury prevention + back school C: standard postal service training in back- injury prevention	LBP incidence	I vs C = 0

Author	Study design (follow-up period)	Study population	Interventions	Outcome	Result
Derebery et al	RCT	117 workers with neck pain	I: neck book	NPDS score	I vs C = 0
	(6 months)		C: no book	FABQ score	I vs C = 0
Dolphens et al	RCT	194 school children,	I: back education program	Prevalence	I vs C = 0
	(8 years)	elementary school	C: no program	FABQ score	I vs C = 0
Geldhof et al	RCT	353 school children, 4^{th}-5^{th}	I: back posture education	FABQ score	I vs C = 0
	(2 years)	grade of elementary school	C: no education	Pain level	I vs C = 0

Author	Study design (follow-up period)	Study population	Interventions	Outcome	Result
George et al	RCT (26 weeks)	4,296 soldiers	I1: traditional lumbar exs. + psychosocial education I2: traditional lumbar exs. I3: core stabilization exs. + psychosocial education I4: core stabilization exs.	Incidence	I1 vs I2 = + I3 vs I4 = +
Glomsrød et al	RCT (3 years)	72 patients with low back pain	I: active back school C: no receive education	Sick leave Pain level Quality of life	I vs C = + I vs C = + I vs C = 0

Author	Study design (follow-up period)	Study population	Interventions	Outcome	Result
Kamwendo et al	RCT (6 months)	51 female secretaries with neck or shoulder pain during previous year before study	I1: traditional neck school C: no intervention	Pain level	I1 vs C = 0
Leclaire et al	RCT (1 year)	141 patients with low back pain < 3 mo before study	I: standard back care program + daily physiotherapy + back school C: standard back care program + daily physiotherapy	Work absenteeism Pain level Disability Mobility	I vs C = 0 I vs C = 0 I vs C = 0 I vs C = 0

Author	Study design (follow-up period)	Study population	Interventions	Outcome	Result
Moffett et al (2006)	RCT (12 months)	243 patient with neck or back pain > 2 week	I1: Mck + book I2: Mck I3: SFA + book I4: SFA	Disability (neck) Disability (back)	I1 vs I2 vs I3 vs I4 = 0 I1 vs I2 = 0 I3 vs I4 = 0 I1 vs I2 vs I3 vs I4 = 0 I1 vs I2 = 0 I3 vs I4 = 0
Pires et al	RCT (3 months)	62 patients with low back pain ≤ 3 months	I1: aquatic exercise program + pain neurophysiology education I2: aquatic exercise program	Pain level Disability	I1 vs I2 = + I1 vs I2 = 0

Author	Study design (follow-up period)	Study population	Interventions	Outcome	Result
Roland et al	RCT (1 year)	777 patients with low pain	I: booklet C: no booklet	Work absence	I vs C = 0
Sahin et al	RCT (3 months)	146 patients with non-specific low back pain > 12 wk	I: back school program + exercise + physical treatment C: exercise + physical treatment	Pain level Disability	I vs C = + I vs C = +
Tavafian et al	RCT (up to 12 months)	74 female patients with low back pain ≥ 90 days	I: back school + medication C: medication	Quality of life	I vs C = +

Author	Study design (follow-up period)	Study population	Interventions	Outcome	Result
van Poppel et al	RCT (6 months)	268 workers	I1: education + lumbar support I2: education I3: lumbar support I4: no intervention	Incidence	I1 vs I2 vs I3 vs I4 = 0 I1 vs I3 = 0

Positive if an educational intervention was demonstrated to be statistically more effective than a control group on at least one key outcome.

Negative if an educational intervention was demonstrated to be statistically less effective than a control group on at least one key outcome.

Neutral (no effect) if an educational intervention did not statistically differ from a control group on any key outcomes.

I, intervention group; I1, intervention group 1; I2 intervention group 2; I3, intervention group 3; I4, intervention group 4; C, control group.

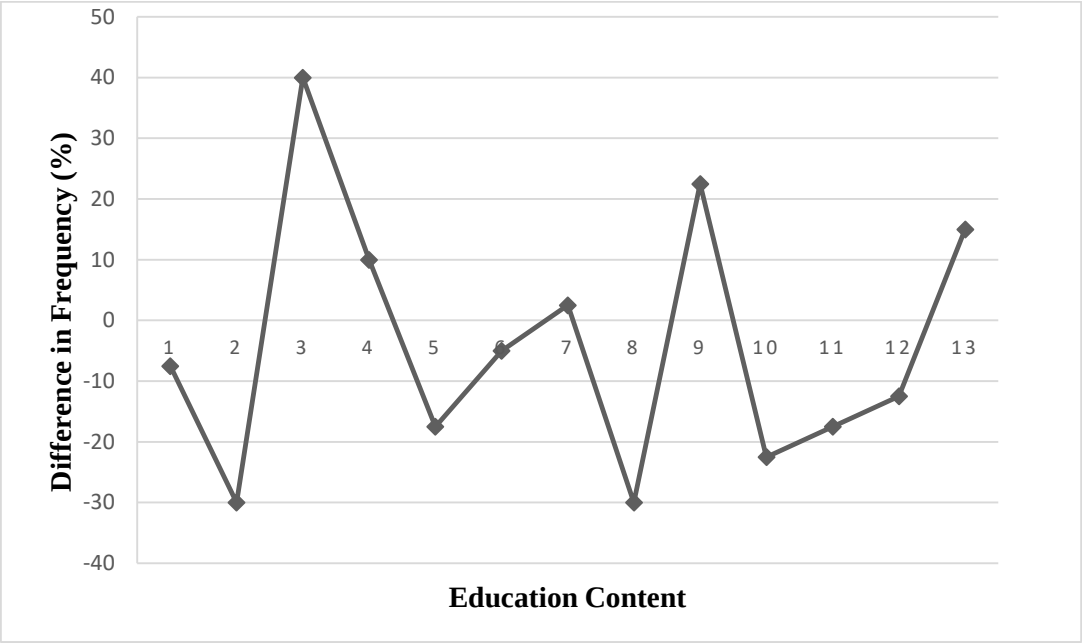
BBQ, back beliefs questionnaire; FABQ, fear avoidance beliefs questionnaire; LBP, low back pain; Mck, McKenzie Approach; MSD, musculoskeletal disorders; NPDS, neck pain and disability scale; ROM, range of motion; SFA, solution-finding approach.

Table 3.3 Frequency of content of education provided in the positive and neutral studies

		Knowledge of disease prevention and ergonomic										Knowledge of treatment				
	Author	Basic knowledge														
		Anatomy	Biomechanics	Function of the spine	Pathophysiology	Information of prevention	Cause of neck/low back pain	Ergonomics	Information of posture	Information of activity	Exercise	Self-management	Life style modification	Information of coping with problems		
Positive results	Cardon et al.	✓	✓		✓				✓					✓		
	Gloomsrod et al.							✓		✓	✓					
	Pires et al.	✓			✓											
	Sahin et al.	✓		✓			✓			✓		✓		✓		
	Tavafian et al.	✓		✓	✓	✓		✓		✓	✓					
	Frequency	80	20	40	60	20	20	40	20	60	40	20	0	40		
	(%)															

	Derebery et al	✓	✓		✓				✓		✓						
	Dolphens et al	✓	✓		✓					✓						✓	
	Geldhofet al	✓	✓		✓	✓				✓	✓						
	Kamwendo et al	✓					✓		✓			✓	✓				
Neutral results	Leclaire et al	✓			✓	✓	✓					✓		✓	✓		
	Little et al	✓								✓	✓	✓	✓				
	Roland et al	✓	✓			✓						✓	✓				
	Santos et al					✓		✓	✓	✓		✓					✓
	van Poppel et al	✓								✓		✓					
	Vidal et al	✓			✓			✓	✓	✓		✓					
	Frequency (%)	**82**	**36**	**0**	**45**	**36**	**18**	**18**	**45**	**64**	**36**	**73**	**36**	**9**	**18**	**9**	

*No information regarding educational content was provided in 4studies (Burton AK, 1999; George et al., 2011; Kovacs. et al., 2007; J. K. Moffett et al., 2006)



Content 1 = Anatomy, 2 = Biomechanics, 3 = Function of spine, 4 = Pathophysiology, 5 = Information of prevention, 6 = Cause of neck/low back pain, 7 = Ergonomics, 8 = Information of posture, 9 = Information of activity, 10 = Exercise, 11 = Self-management, 12 = Lifestyle modification, and 13 = Information of coping with problem

+ value indicated the content favored positive studies.

- value indicated the content favored neutral studies.

Figure 3.2 Difference in frequency of educational content appearing in studies showing positive effect of education and those with neutral (no) effect of education

Table 3.4 Summary of evidence for the effectiveness of education on prevention of non-specific neck pain and non-specific low back pain

Outcome	Illustrative means (95%CI)		Relative effect (95%CI)	N (studies)	GRADE	Comments
	Control group No education	Intervention group Neck education				
Non-specific neck pain						
Prevalence (1°, long-termed effect)	Prevalence of neck pain was 41.8%	Prevalence of neck pain was 54.2%	RR=1.29 (0.96 - 1.74)	194 (1 study)	+000very low[1,2,4,]	Not significant
FABQ (2°, long-termed effect)	Mean FABQ of the control group was 18.3 points	Mean FABQ in the intervention group was 0.05 points (-0.34 - 1.34)		194 (1 study)	+000very low[1,2,4,]	Not significant

Outcome	Illustrative means (95%CI)		Relative effect	N (studies)	GRADE	Comments
	Control group No education	Intervention group Neck education	(95%CI)			
Non-specific low back pain						
Prevalence (1^{o}, long-termed effect)	Prevalence of LBP ranged across control group from 23% to 41.8%	Prevalence of LBP ranged across intervention groups from 20% to 54.2%	RR=1.02 (0.78 - 1.33)	912 (3 studies)	+++0moderate[1]	Not significant
Incidence (1^{o}, long-termed effect)	Incidence of LBP was 35.1%	Incidence of neck pain was 29.7%	RR=0.85 (0.74 - 0.97)	8,161 (3 studies)	++00low[1,2]	Two study did not quantify this outcome but reported no difference between group

Outcome	Illustrative means (95%CI)		Relative effect	N (studies)	GRADE	Comments
	Control group	Intervention group	(95%CI)			
	No education	Neck education				
FABQ various scales (2°, long-termed effect)		SMD FABQ in the intervention groups was -0.02 points (-0.17 - 0.12)		912 (3 studies)	+++0moderate[1,]	No significant

N= total number of patients; CI= confidence interval; [1]Serious limitations of study design (eg, >25% of participants from studies with low quality methods, PEDro score <5 points); [2]Serious inconsistency (eg, I^2>50% or only one RCT was available); [3]Serious indirectness (eg, existed for indirect of outcome measurement); [4]Serious imprecision (eg, fewer than 400 participants were included or only one study included).

Table 3.5 Summary of evidence for the effectiveness of education on treatment of non-specific neck pain and non-specific low back pain

Outcome	Illustrative means (95%CI)		N (studies)	GRADE	Comments
	Control group No education	Intervention group Neck education			
Non-specific neck pain					
Pain level (1°, intermediate-termed effect)		Mean pain intensity in the intervention group was -0.02 points (-0.59 - 0.55)	51 (1 study)	++00low[2,4]	Not significant
Disability (1°, intermediate-termed effect)	Mean disability of the control group was 31.8 points	Mean disability in the intervention group was -0.03 points (-0.39 - 0.33)	360 (2 studies)	+000very low[1,2,4]	One study did not quantify this outcome but reported no difference between group

Outcome	Illustrative means (95%CI)		N (studies)	GRADE	Comments
	Control group No education	Intervention group Neck education			
FABQ (2^{o}, intermediate-termed effect)	Mean FABQ of the control group was 38 points	The mean FABQ in the intervention group was -0.09 points (-0.46 - 0.27)	117 (1 study)	+000 very low[1,2,4]	Not significant
Non-specific low back pain					
Pain level (1^{o}, short-termed effect)			239 (1 study)	++00 low[2,4]	did not quantify this outcome but reported no difference between group
Pain level (1^{o}, intermediate-termed effect)	Mean pain intensity ranged across control group from 3.58 to 4.31 points	Mean pain intensity in the intervention group was -1.10 points (-2.10 to- 0.09)	208 (2 studies)	++00 low[2,4]	Significant

Outcome	Illustrative means (95%CI)		N (studies)	GRADE	Comments
	Control group No education	Intervention group Neck education			
Pain level (1°, long-termed effect)	Mean pain intensity ranged across control group from 1.2 to 2.7 points	Mean pain intensity in the intervention group was -0.39 points (-1.57 - 0.78)	213 (2studies)	++00 low[A4]	Not significant
Disability (1°, intermediate-termed effect)	Mean disability ranged across control group from 25.9 to 39.93 points	SMD disability in the intervention group was -0.58 points (-0.86 to - 0.03)	208 (2 studies)	+++0 moderate[4]	Significant
Disability (1°, long-termed effect)	Mean disability of the control group was 8.9 points	The mean FABQ in the intervention group was 1.90 points (-2.81 - 6.61)	384 (2 studies)	++00 low[A4]	One study did not quantify this outcome but report no difference between group

Outcome	Illustrative means (95%CI)		N (studies)	GRADE	Comments
	Control group No education	Intervention group Neck education			
QL (2°, long-termed effect)	Mean QL ranged across control group from 11.6 to 111.3 points	SMD QL in the intervention group was -0.10 points (-0.90 - 0.70)	146 (2 studies)	++00 low[2,4]	Not significant
Work absence (2°, long-termed effect)	Mean work absence of the control group was 63.9 points	Mean work absence in the intervention group was -49.50 points (-75.11 - -23.89)	990 (3 studies)	+++0 moderate[2]	two study did not quantify this outcome but reported no difference between group

N= total number of patients; CI= confidence interval; [1]Serious limitations of study design (eg, >25% of participants from studies with low quality methods, PEDro score <5 points); [2]Serious inconsistency (eg, I^2 >50% or only one RCT was available); [3]Serious indirectness (eg, existed for indirect of outcome measurement); [4]Serious imprecision (eg, fewer than 400 participants were included or only one study included).

Summary of effectiveness of education

Evidence for neck pain prevention

Only a single study investigated the effectiveness of education on prevalence of neck pain. There was very low quality evidence (1 RCT, N = 194; limitation in study design; inconsistency, imprecision) indicating no long-term effect of a spine care education program on the 8-year prevalence of neck pain and fear avoidance belief score.

Evidence for low back pain prevention

Three studies investigated the effectiveness of education on prevalence of low back pain. The results showed moderate heterogeneity (I2 = 49%) for prevalence of low back pain. No long-term effect of education program on the prevalence of low back pain was detected (pooled RR [95%CI] = 1.02 [0.78–1.33]) (Fig. 3.3).

Three studies investigated the effectiveness of education on incidence of low back pain. However, only one study reported a number of incident cases. Thus, qualitative analysis was conducted. There was low quality evidence (3 RCTs; N = 8161; limitation in study design, inconsistency) indicating a positive effect of education on incidence of low back pain in a long-term follow-up.

Three studies investigated the effectiveness of education on fear avoidance belief score. The results showed low heterogeneity (I2 = 17%) for fear avoidance belief

score. No long-term effect of education program on fear avoidance belief score was detected (pooled SMD [95%CI] = −0.02 [−0.17−0.12]) (Fig. 3.4).

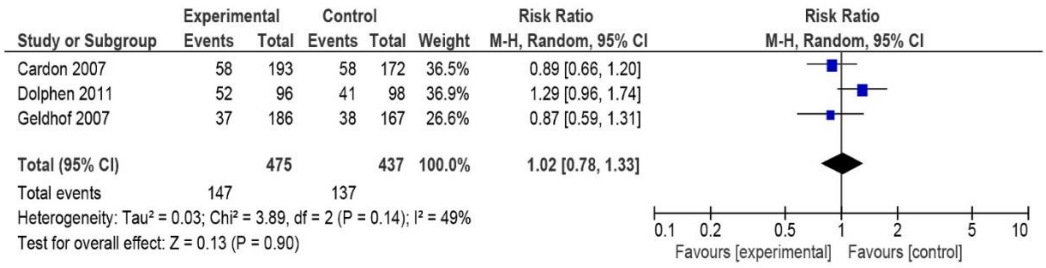


Figure 3.3 *Education versus no education on prevalence of low back pain* (long-termed effect)

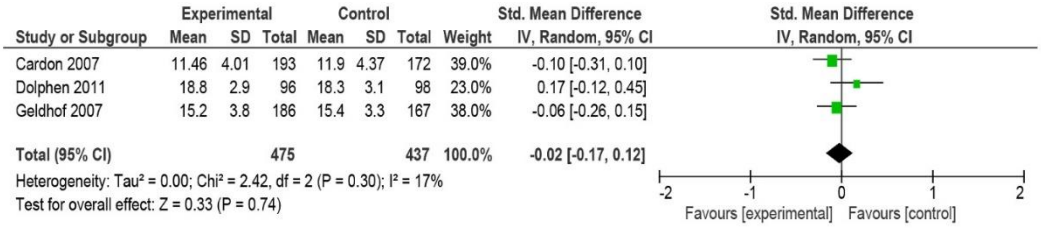


Figure 3.4 *Education versus no education on fear avoidance believes score* (long-termed effect)

Evidence for neck pain treatment

There was one study each investigating the effectiveness of education on pain intensity level and fear avoidance belief score. The two studies examined the effectiveness of education on disability level. Of these, only one reported the MD and SD of the outcome. Thus, qualitative analysis was conducted. There was very low to low quality evidence (1 RCT; N = 51; inconsistency, imprecision for pain intensity level, 2 RCTs; N = 360; limitation in study design, inconsistency, imprecision for disability level, 1 RCT; N = 117; limitation in study design, inconsistency, imprecision for fear avoidance belief score) indicating no intermediate-term effect of education program on pain intensity and disability levels as well as fear avoidance belief score.

Evidence for low back pain treatment

Four studies investigated the effectiveness of education on pain intensity level. The results showed considerable heterogeneity (I2 = 64%–82%) for pain intensity level. There was intermediate-term effect of education program on pain intensity level was detected (pooled MD (pooled MD [95%CI] = −1.10.19 [−2.10–0.09]) (Figs. 3.5). No long-term effect of education program on pain intensity level was detected (pooled MD [95%CI] = −0.39[−1.57–0.78] for long-term effect) (Figs. 3.6).

Four studies investigated the effectiveness of education on disability level. The results showed homogeneity (I2 = 0%) for disability level. There was intermediate-term effect of education program on disability level was detected (pooled SMD [95%CI] = −0.58 [−0.86–0.30]) (Fig. 7). There was low quality evidence (2 RCTs; N = 384;

inconsistency, imprecision) indicating no long term effect of education program on disability level.

Two studies investigated the effectiveness of education on quality of life score. The results showed considerable heterogeneity (I2 = 83%) for quality of life score. No long-term effect of education program on quality of life score was detected (pooled SMD [95%CI] = −0.10 [−0.90,0.70]) (Fig. 3.8). Three studies examined the effectiveness of education on work absence. Only one study reported the MD and SD of the outcome. Thus, qualitative analysis was conducted. There was moderate quality evidence (3 RCTs; N = 990; inconsistency, imprecision) indicating no long-term effect of education program on work absence.

Sensitivity analysis

Sensitivity analysis of the results of meta-analysis was not performed because changing the cut-off point from ≥50 to ≥60% or from ≥50% to ≥70%, would lead to only one study or no study left for data analysis. For the results using qualitative analysis (the GRADE approach), changing the cut-off point from ≥50 to ≥60% or from ≥50% to ≥70% would not have altered our conclusions regarding the effect of education on prevention of neck and low back pain as well as treatment of low back pain. Changing the cut-off point from ≥50 to ≥60% or from ≥50% to ≥70 would change the quality of evidence from low to very low quality for the effectiveness of education on pain intensity level for neck pain treatment.

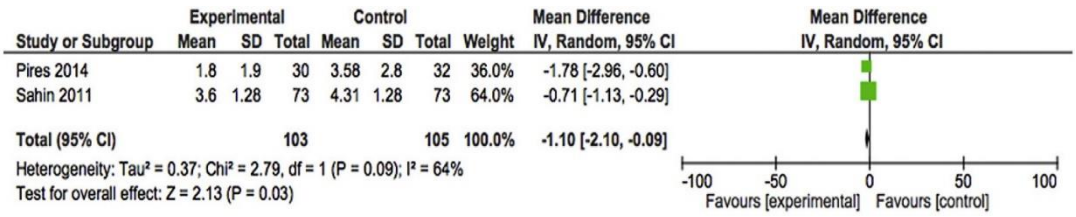


Figure 3.5 *Education versus no education on pain level*
(intermediate-termed effect)

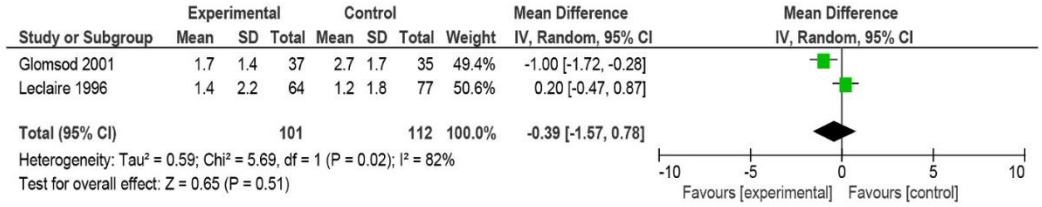


Figure 3.6 *Education versus no education on pain level (long-termed effect)*

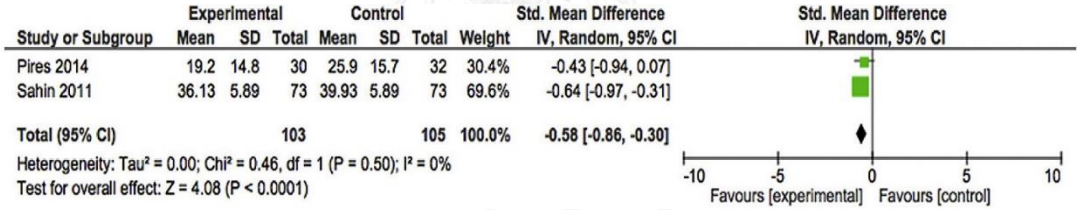


Figure 3.7 *Education versus no education on disability level*
(intermediate-termed effect)

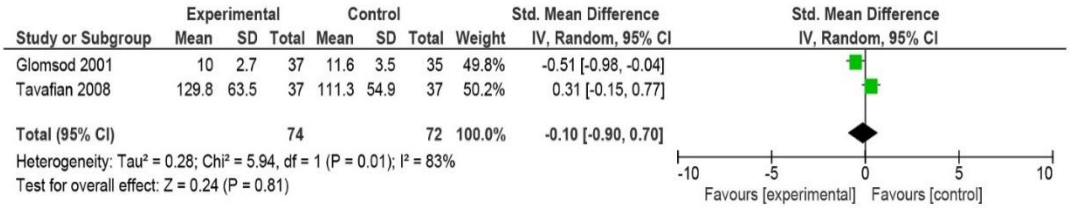


Figure 3.8 *Education versus no education on quality of life score*
(long-termed effect)

Discussion

Although the studies included were categorized into groups according to the purpose of education, body region, outcome measurement, and follow-up duration, we still found heterogeneity among studies in terms of the content of education, teaching method, and stage of disease. Within the limitations, the results indicated that an education program was not effective in preventing and treating neck pain. Education program was effective in treating low back pain in the intermediate-term follow-up but not in the long-term follow-up. Conflicting evidence was found for the effectiveness of education on prevention of low back pain.

Methodological considerations

Fifty-six percent of studies included failed to blind the assessors who measured at least one key outcome. Blinding of all participants, therapists, and assessors are important for the internal validity of a study. Participant blinding ensures that the apparent effect (or lack of effect) of treatment is not due to the placebo effect or Hawthorne effect. Expectations are an important factor in placebo effects (Price et al., 1999). Participants in the control group would have had no expectations, but the intervention group was prone to expectations. Blinding of all therapists and assessors is also important to guarantee the apparent effect of treatment is not due to the therapist's/assessor's enthusiasm or lack of enthusiasm for the intervention or control condition (Portney and Watkins, 2009). By definition, it is not possible to blind

participants and therapists in an education-related trial. However, one strategy that could be conducted to minimize the expectation bias of participants and therapists is to set a trial in which at least two educational interventions are compared and ensure that the interventions are equally credible and acceptable to participants and that participants have limited experience or expectations for either intervention. Another solution along these lines would be to provide a sham intervention consisting of a brief leaflet with general information to the control group using a Zelen design (Torgerson and Roland, 1998).

Fifty-six percent of studies included failed to report an intention-to-treat analysis. It is important that data are analyzed according to the original random assignment in order to reduce potential for biases if dropouts are related to outcomes or group assignment. Also, an intention-to-treat analysis helps to preserve the original balance of a random assignment (Portney and Watkins, 2009).

Study characteristics

The follow-up periods for the effectiveness of educational intervention ranged from one week to eight years. No data collection regarding outcomes during follow-up periods may pose a threat of recall bias, which may influence the results of the studies. Future studies should pay more attention to the frequency of data collection during their follow-up period, and it is recommended that data are collected at least every 3 months or are obtained from a continuous registration system.

It was also found that the educational content among the studies included differed substantially. Three education topics that may be effective in the prevention and treatment of neck and low back pain are function of the spine, information of activity, and information on coping with the problems. Sahin et al. (2011) suggested that knowledge about activities, the function of the spine, and coping with the problems would increase the self-esteem of patients, which consequently improved quality of life and prevented recurrences (Sahin et al., 2011). Tavafian et al. (2008) showed that knowledge about activities and the function of the spine in an educational program improved quality of life in low back pain patients (Tavafian et al., 2008). Glomsrød et al. (2001) included knowledge about activities in their study because it was one factor contributing to favorable long-term effects (Glomsrød et al., 2001).

Evidence of the effectiveness of education on prevention and treatment of non-specific neck and low back pain

All studies included investigated the effectiveness of education with intermediate- and long-term follow-ups. Interestingly, the findings indicate that education was not effective in preventing non-specific neck pain, in terms of reducing prevalence or fear avoidance belief. Education was also not effective in treating nonspecific neck and low back pain (long-term effect), in terms of reducing pain intensity, disability, fear avoidance belief, or work absence as well as increasing quality of life. Education was effective in treating nonspecific low back pain (intermediate-

term effect), in terms of reducing pain intensity and disability. The body of evidence regarding the effectiveness of education on prevention of non-specific low back pain is still inconsistent. Within the limitations, it seems that providing education alone is insufficient in preventing and treating neck and low back pain. One effective management for musculoskeletal disorders is self-management (Moffett and McLean, 2006), which aims not only for the provision of information to increase knowledge but to further change health behavior and health status (Lorig, 2002). Self-management requires patients to have adequate health literacy, referring to the cognitive and social skills that determine the motivation and ability of individuals to gain access to, understand, and use information in ways which promote and maintain good health (Nutbeam, 1998;Briggs et al., 2010;Briggs et al., 2011). In other words, health literacy refers to a person's ability to comprehend health information and use that information to make informed decisions about one's health and medical care, thus giving individuals the knowledge and skills to optimally function and navigate in the health care environment. These skills include being able to discern healthy lifestyle choices, obtain knowledge of disease and management, identify appropriate preventative and health care services, and carry out self-care tasks (Ennis et al., 2012). To successfully become health literate, one should have sufficient knowledge regarding disease and the management to acquire the skills needed for health care. Thus, educational intervention aimed at enhancing health literacy may hypothetically be an effective intervention in preventing and treating neck and low back pain by helping patients

navigate in the health care system and seek other more effective ways to treat their neck or low back problem. Thus, future research should focus on how to enhance an individual's health literacy and the context of health literacy suitable for specific groups of patients.

Sensitivity analysis

In this review, a prior cut-off point of >50% was used, which might have influenced the level of evidence and potentially the results of the review. Thus, we assessed the effect of the cut-off point used in the methodological quality assessment on the level of evidence. The findings of sensitivity analysis suggest that there have been a small number of very good quality studies investigating the effectiveness of education programs compared to no education program. Thus, further study is required before any firm conclusions can be drawn.

Limitations

There are three main methodological limitations of this systematic review. First, the search strategy was limited only to full published reports in English. The possibility of language bias may have affected the results of the review. Second, only one reviewer searched for studies. The possibility of selection bias cannot be ruled out and not all studies were identified, affecting the results of this review. Third, the researcher summarized the results from studies with low to considerable heterogeneity. This may

explain the observed variation in the results among studies. Future research is required to indicate whether differences in these aspects affect the effectiveness of education on the prevention and treatment of neck and low back pain.

Conclusions

This review revealed that education programs were not effective in preventing and treating neck pain as well as treating low back pain (for long-term effect only). Conflicting evidence was found for the effectiveness of education on prevention of low back pain. However, three education topics that may be effective in the prevention and treatment of neck and low back pain were identified, namely, function of the spine, information on activities, and information on coping with the problems. Unless supplementary high-quality studies provide different evidence, education programs are not recommended for the prevention or treatment of neck pain as well as low back pain.

Authors' contributions

The authors have contributed in the following ways: KA provided concept/research design, data collection, data analysis and manuscript writing. ES provided data collection, analysis and manuscript writing. PJ provided concept/research design, data analysis and manuscript writing. AJ provided

concept/research design and manuscript writing. All authors read and approved the final manuscript.

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Summary

This review showed education programs were not effective in preventing and treating neck pain as well as treating low back pain (for long-term effect only). Conflicting evidence was found for the effectiveness of education on prevention of low back pain. Within the limitations, it seems that providing education alone is insufficient in preventing and treating neck and low back pain. One effective management for musculoskeletal disorders is self-management, which aims not only for the provision of information to increase knowledge but to further change health behavior and health status. Self-management requires patients to have adequate health literacy, referring to the cognitive and social skills that determine the motivation

and ability of individuals to gain access to, understand, and use information in ways which promote and maintain good health.

However, three education topics that may be effective in the prevention and treatment of neck and low back pain were identified, namely, function of the spine, information on activities, and information on coping with the problems. These topics are used as the starting point for the development of health literacy questionnaire relating to understanding domain (Chapter IV).

CHAPTER 4

Development of a health literacy questionnaire for predicting non-specific neck pain in office worker

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Abstract

Background: Health literacy has important implications for health programs and health service delivery models. Non-specific neck pain is common in office workers. The study aimed to identify domains of health literacy associated with the development of non-specific neck pain in office workers, which were used to develop a health literacy questionnaire.

Design: Questionnaire items were developed from in-depth interviews. Factor analysis was used to refine the questionnaire. Psychometric properties of the questionnaire were assessed.

Participants: Thirty three participants (three professors, 10 physical therapists, and 20 office workers) took part in in-depth interviews. Data from 280 and 195 office workers with and without neck pain were used for factor analysis and psychometric property assessment, respectively.

Results: In-depth interviews identified five domains of health literacy relating to non-specific neck pain; accessing, understanding, appraising, applying, and extrinsic/intrinsic factors influencing health literacy. The neck pain-specific heath literacy questionnaire for office workers was developed and contained six questions. The test-retest reliability was good (ICC (3,1) = 0.75). Confirmatory factor analysis showed that the model fit indices were acceptable (RMSEA = 0.07, SRMR = 0.025, CFI = 0.98). Mann-Whitney U test showed that the total score of the developed questionnaire was significantly lower

in office workers with neck pain than in those without neck pain ($p<0.05$), indicating acceptable discriminative validity.

Conclusions: The neck pain-specific heath literacy questionnaire for office workers was developed and had acceptable psychometric properties. The questionnaire can be used to identify office workers with poor health literacy related to non-specific neck pain.

Key words: health literacy, non-specific neck pain, office worker, questionnaire

Introduction

Neck pain is a major health problem in office workers (Côté et al., 2009) with a 1-year prevalence of 42%-69% (De Loose et al., 2008;Janwantanakul et al., 2008) and 34%-49% reporting new onset of neck pain during 1-year follow-up (Korhonen et al., 2003;Hush et al., 2009). In a working population, neck pain is viewed as an episodic health problem over a lifetime with variable recovery between episodes (Guzman et al., 2009) and 60%-80% reporting recurrent neck pain one year later (Carroll et al., 2009). Neck pain causes considerable personal suffering due to pain, disability, and impaired quality of work and life in general, which leads to a great socio-economic burden on both patients and society (Borghouts et al., 1999;Côté et al., 2009).

An effective approach to manage musculoskeletal disorders (MSDs) is self-management based on the biopsychosocial model (Briggs et al., 2010;Briggs et al., 2011). Effective self-management requires patients to have adequate health literacy, which is an individual's ability to seek, understand, and utilize health information, in order to make judgments and take decision for concerned health care, disease prevention, and health promotion to maintain and improve quality of life (Gong et al., 2007;Jordan et al., 2008). Literacy generally means the ability to read and write, which are basic skills needed to understand and communicate information. However, health literacy requires some additional skills, including the ability to find, evaluate, and integrate health information from a variety of contexts (Peerson and Saunders, 2009;World Health Organization, 2009). The World Health Organization (WHO) points

out that health literacy implies the achievement of a level of knowledge, personal skills, and confidence to take action to improve personal and community health by changing personal lifestyles and living conditions. By improving people's access to health information, and their capacity to use it effectively, health literacy is critical to empowerment (Nutbeam, 1998;World Health Organization, 1998b). The main competencies of health literacy compose of (1) access (i.e. the ability to seek, find and obtain health information); (2) understand (i.e. the ability to comprehend health information); (3) appraise (i.e. the ability to interpret, filter, judge, and evaluate health information) and; (4) apply (i.e. the ability to communicate and use the information to maintain and improve health) (Sorensen et al., 2012). Sub-optimal health literacy in patients with chronic conditions, such as asthma, diabetes, and rheumatoid arthritis, has been found to associate with poorer health conditions, knowledge, and limited self-management skills (Williams et al., 1995;Briggs et al., 2010;Briggs et al., 2011). Health literacy, therefore, has important implications for health programs and health service delivery models, particularly in the context of management of chronic health conditions (Briggs et al., 2010;Briggs et al., 2011).

Currently available tools aimed to measure health literacy, such as the Rapid Estimate of Adult Literacy in Medicine (REALM), Test of Functional Health Literacy in Adults (TOFHLA), Short Test of Functional Health Literacy in Adults (S-TOFHLA), or Newest Vital Sign (NVS), assess an individual's reading ability and vocabulary. These tools have been developed for the general population, not for specific groups of

patients (Martin et al., 2009;Sorensen et al., 2012). The causes and risk factors attributed to individual conditions are different, thus the prevention and management should be specific to individual conditions. The knowledge for making judgments and taking decisions regarding healthcare and disease prevention should also have specific context to individual conditions. For example, Gong et al (Gong et al., 2007) and Sabbahi et al (Sabbahi et al., 2009) demonstrated that TOFHLA did not associate with oral health outcomes, because the tool did not measure the oral health domain. Later, researchers specifically developed the Test of Functional Health Literacy in Dentistry (TOFHLiD) to measure oral health literacy and found associations between oral health outcomes and TOFHLiD (Gong et al., 2007;Sabbahi et al., 2009). In 2008, Ishikawa et al (Ishikawa et al., 2008) developed an instrument to assess communicative and critical health literacy among Japanese office workers for health promotion at the workplace. To our knowledge, no study has investigated the relationship between health literacy and non-specific neck pain. The aim of this study was to identify domains of health literacy associated with the development of non-specific neck pain in office workers. The results were then used to develop a neck pain specific-health literacy questionnaire for office workers. Such health literacy questionnaire would provide guiding information for health professionals and individuals in joint decisions on disease prevention. Also, the questionnaire would identify important educational topics that may be effective in the prevention of non-specific neck pain in office workers.

Methods

The study was divided into three phases. Phase I consisted of two steps: step I – identification of questionnaire items and step II – items and respond scale generation. Phase II involved a process of item reduction. Phase III studied validity and reliability of the developed questionnaire. This study was approved by the University Human Ethics Committee. Participants were explained the purpose and procedure of this study and signed an informed consent form.

Phase I

Participants

Participants comprised four groups: professors, physical therapists, and office workers with and without non-specific neck pain. Non-specific neck pain is pain in the neck region (with or without radiation) without any specific systematic disease being detected as the underlying cause of the complaint (Borghouts et al., 1998). A snowball sample of professors who taught musculoskeletal physical therapy and had at least 5 years of clinical experience in musculoskeletal physical therapy in a Thai university was conducted. Physical therapists working in a clinic or a hospital in Thailand and having at least 5 years of clinical experience in musculoskeletal physical therapy were conveniently sampled. Both male and female office workers with and without non-specific neck pain in the previous 6 months, aged between 18-55 years, who worked full-time, and had at least 5 year of experience as office workers were conveniently

recruited. Office workers were excluded if they reported pregnancy, had a history of trauma or accidents in the spinal region or had a history of spinal and intra-abdominal surgery in the previous 12 months, or had been diagnosed with congenital anomaly of the spine, rheumatoid arthritis, infection of the spine and discs, ankylosing spondylitis, spondylolisthesis, spondylosis, tumor, systemic lupus erythymatosus (SLE), or osteoporosis.

Procedures

In step I, professors, physical therapists, and office workers with and without non-specific neck pain were in-depth interviewed. Semi-structured face to face interviews were used to gather information regarding self-management of neck pain. The semi-structured interview included four domains of health literacy (i.e. accessing, understanding, appraising, and applying). The data were analyzed by three independent researchers using content analysis and descriptive meta-metrics.

In step II, the selection of content to generate questions was conducted. The selection criteria were:

1) the content should be related to self-management of neck pain.
2) the content should be related to the ability to seek, understand, appraise, and apply information to manage neck pain.
3) the content should be able to differentiate office workers with neck pain from those without neck pain.

4) the content should be able to differentiate office workers with or without neck pain from professors or physical therapists.

A researcher generated questions and defined responses to each question in the questionnaire. For the domain of accessing, appraising, and applying, a five-point Likert-style format was used for responses to each question. For the domain of understanding, multiple-choice format was used for responses to each question. The first version of non-specific neck pain health literacy questionnaire was reviewed and assessed for its content validity by three experts. Index of item objective congruence (IOC) was used for content validity analysis and IOC was set at ≥0.5 (Guyatt et al., 1993;Portney and Watkins, 2009).

Phase II

Participants

A convenience sample of office workers with and without non-specific neck pain in two large-scale enterprises in Bangkok was recruited. The enterprises participating in this study were a public university and a commercial bank. Office workers were included and excluded according to the criteria described in phase I.

Procedures

Office workers were approached and invited to participate in this study. They were informed of the objective and details of the research and asked to provide informed consent upon agreement to participate. Subjects were asked to complete the questionnaire developed in phase I (the 1st version). The data were analyzed using exploratory factor analysis (EFA) to determine the number of health literacy domains and the optimal number of questions to retain in the questionnaire. The number of health literacy domains in the data set was estimated using eigenvalue >1 and the Scree test. The questions were included in the questionnaire if a factor loading was more than 0.6. The 2nd version of questionnaire was developed at the end of phase II.

Phase III

Participants

Office workers with and without non-specific neck pain were conveniently recruited from two large-scale enterprises in Bangkok. The enterprises participating in this study were a public university and a commercial bank. Office workers were included and excluded according to the criteria described in phase I.

Procedures

Office workers were approached and invited to participate in this study. They were informed of the objective and details of the research and asked to provide informed consent upon agreement to participate. Subjects were asked to complete the questionnaire developed in phase II (the 2nd version). The data were analyzed to determine its validity and reliability. Confirmatory factor analysis (CFA) was conducted to confirm whether the questionnaire from phase II had good model fit, using LISREL 8.72 (Jordan et al., 2013). Model fit was assessed using a combination of absolute and incremental fit indices: root mean square error of approximation (RMSEA), standardized root mean square residual (SRMR), and comparative fit index (CFI). The criteria for good model fit were RMSEA <0.08, SRMR <0.09, and CFI >0.95. Discriminative validity was evaluated by comparing the total score of health literacy questionnaire (final version) between office workers with and without non-specific neck pain by using Mann-Whitney U test. The level of significance was set to $p<0.05$ (Jankovic et al., 2016;Xiao et al., 2016). Internal consistency was assessed using Cronbach's alpha.

The test-retest reliability of the questionnaire was conducted on 100 participants who were randomly selected from both office workers with and without non-specific neck pain groups (n = 50 in each group). Each subject was asked to complete the questionnaire on two occasions over a two-week period. The intraclass correlation coefficient [ICC (3,1)] was calculated for test-retest reliability using the SPSS statistics software, version 17.0.

Results

Phase I

In step I, 33 interviews were conducted across the four groups: three professors, 10 physical therapists, 10 office workers with non-specific neck pain, and 10 office workers without non-specific neck pain. Data from the interviews were analyzed by three independent researchers using content analysis and descriptive meta-metric. This process revealed five domains reflecting non-specific neck pain health literacy in office workers: 1) accessing, 2) understanding, 3) appraising, 4) applying, and 5) extrinsic/intrinsic factors influencing health literacy.

In step II, according to the selection criteria, four potential domains for measurement development were identified, including accessing, understanding, applying, and extrinsic/intrinsic factors influencing health literacy. The appraising domain was excluded because it was unable to differentiate between office workers with and without non-specific neck pain. The 1st version of non-specific neck pain health literacy questionnaire consisted of 39 questions in four domains: 6 questions in accessing, 9 questions in understanding, 21 questions in applying, and 3 questions in extrinsic/intrinsic factors influencing health literacy. The results from the item review of experts showed the index of IOC of all questions to be 0.92, indicating good content validity.

Phase II

A total of 280 office workers completed the questionnaire, a response rate of 100%. Table 4.1 presents the baseline characteristics of participants. Responses from the participants were analyzed by EFA. According to the criteria of factor loading >0.6, only the applying domain of health literacy, which consisted of 7 questions, was included in the questionnaire. Included questions related to five factors, according to the criteria of eigenvalue >1 (Table 4.2). Factor 1 relating to working posture, Factor 2 relating to rest break, and Factor 3 relating to working habit consisted of one question each. Factor 4 relating to pain management while working and Factor 5 relating to neck muscle exercise consisted of two questions each. In summary, the 2nd version of non-specific neck pain health literacy questionnaire consisted of seven questions in five factors.

Table 4.1 Characteristics of participants

Characteristics	Phase II (n=280)		Phase III (n=195)	
	N (%)	Mean ± SD	N (%)	Mean ± SD
Gender				
Male	92 (32.9)		49 (25.1)	
Female	188 (67.1)		146 (74.9)	
Age (years)		39.5 ± 8.3		40 ± 7.9
20-29	33 (11.8)		16 (8.2)	
30-39	111 (39.6)		76 (39.0)	
40-49	94 (33.6)		70 (35.9)	
50-55	42 (15.0)		33 (16.9)	
History of neck pain				
Yes	130 (46.4)		91 (46.7)	
No	150 (53.6)		104 (53.3)	

Table 4.2 Factor loading for seven questions in the developed questionnaire

	Factor loading				
	Posture	Rest break	Working habit	Pain management	Exercise
Question 1	0.658				
Question 2		0.908			
Question 3			0.742		
Question 4				0.797	
Question 5				0.873	0.294
Question 6	0.238				0.709
Question 7					0.932

Question 1 in Factor 1 (working posture); Question 2 in Factor 2 (rest break); Question 3 in Factor 3 (working habit); Question 4 and 5 in Factor 4 (pain management); Question 6 and 7 in Factor 5 (neck-related exercise)

Phase III

A total of 195 office workers completed the questionnaire, a response rate of 100%. Table 1 presents the baseline characteristics of participants. The CFA revealed that the 2nd version of questionnaire did not have good fit. There were two questions correlated with more than one factor (5th and 6th question). Fifth question was excluded because it had factor loading in Factor 5 more than factor loading of sixth question in Factor 1.

Moreover, such question correlated with more than one factor (Factor 4 and 5), indicating its inappropriateness for measuring neck pain-specific heath literacy in office workers. Thus, one question (i.e. if you have a neck pain during work, will you stretch neck muscle to release pain?) was excluded from the 2nd version of questionnaire. As a result, the final (3rd) version of non-specific neck pain health literacy questionnaire, which consisted of six questions in five factors in the applying domain of health literacy, presented a good fit (RMSEA = 0.07, SRMR = 0.025, and CFI = 0.98). Factor 1 relating to working posture, Factor 2 relating to rest break, Factor 3 relating to working habit, and Factor 4 relating to pain management while working consisted of one question each. Factor 5 relating to neck muscle exercise consisted of two questions. Discriminative validity assessment showed that a group of office workers with non-specific neck pain had statistically lower total scores on the health literacy questionnaire than a group of office workers without non-specific neck pain ($p<0.05$) (Table 4.3). Cronbach's alpha reliability coefficient was 0.64 and 0.53 when tested in office workers with and without non-specific neck pain, respectively, indicating moderate internal consistency(Bailly et al.). The test-retest reliability of the questionnaire demonstrated good reliability (ICC [3,1] = 0.75).

Table 4.3 Discriminative validity between office workers with and without non-specific neck pain (total score)

	Office workers with non-specific neck pain (n=91)		Office workers without non-specific neck (n=104)		P
	Mean Rank	Sum of Ranks	Mean Rank	Sum of Ranks	
Total scores of health literacy questionnaire	86.04	7830	108.46	11,280	0.005

Mann-Whitney U tests; significant differences ($p < 0.05$)

Discussion

The purpose of this study was to develop a neck pain-specific heath literacy questionnaire for office workers. Based upon a conceptual framework of health literacy, the development of questionnaire started with in-depth interview with diverse participant groups and selection of content to generate questions. Through purposeful sampling, the researchers appraised a broad range of groups to qualitatively identify and understand potential constructs of non-specific neck pain health literacy for office workers. The conceptualization of non-specific neck pain health literacy devised from experiences of health professionals and physical therapists as well as from the office workers' perspective. The exploratory factor analysis and confirmatory factor analysis

were then undertaken to identify and confirm the explicit concept of non-specific neck pain health literacy for office workers (Polit, 2015). The results led to the development of new questionnaire called “Neck pain-specific Heath Literacy for Office Workers (NHLOW)” (Appendix A).

The conceptualization of health literacy in this study is consistent with theory (Nutbeam, 2008;Sorensen et al., 2012). Only the applying domain of health literacy (i.e. the ability to use information to maintain and improve health), not the accessing, understanding, appraising, and extrinsic/intrinsic factors influencing health literacy domains, were included in the NHLOW. An increase in media reports and rapid diffusion of the internet facilitates access to health information for all. The target population of the current study, i.e. office workers, is commonly educated. Therefore, they are likely to be able to understand and appraise health information. The applying information domain thus becomes a single important component of health literacy to differentiate between office workers with and without non-specific neck pain.

The NHLOW comprised six questions. Question 1-4 involve with behaviors of office workers during work, while Question 5-6 concerns neck-related exercise. The total score of the NHLOW ranges from 0 to 24, with higher scores indicating higher health literacy. It is hypothesized that office workers with high health literacy scores possess better health behaviors, health outcomes, and self-management skill than those with low scores of health literacy (Briggs and Jordan, 2010). Office jobs requires sitting for long hours of computer work behind a screen, leading to continuous and

static contraction of postural muscles. The forward head posture when registered in the sitting position has been identified as a risk factor for the development and increased frequency and severity of neck pain (Haughie et al., 1995). Irregular head and body postures were a main predictors for the occurrence of neck complaints (Eltayeb et al., 2009). Perceived muscular tension was a strong predictor of future neck-shoulder symptoms in symptom-free office workers and was the strongest risk factor for the onset of neck pain (Huysmans et al., 2012;Paksaichol et al., 2015). Several hypotheses have been proposed for the pathogenesis of work-related musculoskeletal symptoms and pain. One suggests that selective and sustained activation of type I muscle fibers can be seen as the most influential hypothesis for the development of muscle damage due to sustained low-intensity muscle contraction (the Cinderella hypothesis). This may lead to Ca2+ accumulation and homeostatic disturbances in the active muscles due to poor blood circulation and an impaired metabolic waste removal mechanism. These pathological changes in the active muscles lead to muscle cell damage (Wahlstro¨m, 2005;Visser and van Dieen, 2006). In the same way, a proper recovery of muscles is believed to be crucial in avoiding MSDs. In this context, the general purpose of exposure variation is to give the motor units that would otherwise be overloaded an opportunity to relax (Mathiassen, 2006). Rest-break interventions have been recommended to decrease musculoskeletal symptoms (Janwantanakul et al., 2008). Individual operators can perform some physical activity, exercise, or change their posture during the breaks (Barredo and Kelly, 2007). In addition, previous

epidemiological studies found low muscle endurance among office workers with neck pain (Cagnie et al., 2007). Sihawong et al (Sihawong et al., 2014) reported that neck muscle stretching and endurance exercise has been found to be beneficial in the prevention of non-specific neck pain in office worker.

The NHLOW showed good validity and reliability for psychometric properties, including discriminative validity of the domains, internal consistency, and test-retest reliability. Discriminative validity assesses whether the health literacy questionnaire can discriminate office workers in different groups, i.e. office workers with and without non-specific neck pain. It was evaluated by comparing the total score of the NHLOW between office workers with and without non-specific neck pain groups. The results showed that office workers with non-specific neck pain had significantly lower total scores than office workers without non-specific neck pain, suggesting a discriminative validity of the NHLOW (Hu et al., 2016;Xiao et al., 2016). The internal consistency was investigated with the use of Cronbach's alpha coefficient. According to Bowling (Bowling, 2002), an alpha of 0.5 or higher is considered as a sign of acceptable internal consistency. In this study, internal consistency measured by Cronbach's alpha was 0.53 and 0.64, indicating that the items in the NHLOW are homogeneous and thus are measuring the same underlying concept. Test-retest reliability assesses the extent to which scores are stable and reproducible. Reliability coefficients were interpreted as ICCs below 0.75 indicating poor to moderate reliability and equal or above 0.75 indicating good reliability (Portney and Watkins, 2009;Polit, 2015). In this study, the

coefficient of stability was 0.75 as represented by the Intraclass Correlation Coefficient (ICC [3,1]), demonstrating good test-retest reliability of the questionnaire.

The NHLOW is a promising tool to be used for identifying office workers in need of early intervention to prevent the development of non-specific neck pain. Identification of persons at risk would also mean the enhancement of resource allocation to those most in need and most likely to benefit from it. Due to its easy-to-administration and low cost, the questionnaire can be used at a population level (Linton and Hallden, 1998;Moons et al., 2009). The NHLOW can also be utilized as a guide of important education topics to prevent non-specific neck pain in office workers. Effective management for MSDs should include self-management program. Effective self-management requires persons to have adequate health literacy (Williams et al., 1995;Briggs et al., 2010;Briggs et al., 2011). Thus, an effective prevention program for non-specific neck pain in office workers should include an intervention to improve an individual's health literacy.

A major strength of this study is the application of multiple processes to develop the questionnaire, including in-depth interviews as well as exploratory and confirmatory factor analysis. Also, the number of office workers participating in the study and the high response rate enhance the internal validity of the study. There are at least two methodological limitations that are noteworthy. First, the use of a convenience sample restricts the external validity of this study. Thus, generalization of the results from this study to other working populations should be made with caution.

Second, the cross-sectional design of this study did not accommodate an evaluation of the predictive validity of the NHLOW. Further prospective study is required to assess the predictive validity of the NHLOW. A further limitation relates to the total score calculated from the five factors. In short, the unequal items of each factor mean that greater weight is given to Factor 5, which consists of two questions. One should remain aware of this when generating interpretations based upon the total score calculation. An alternative would be to use the average of the two questions in the total score. Finally, it has been argued that different factors might not be added into a total score. However, all five factors originated from one domain, which summarizes the impact of the ability to use the information to maintain and improve health (applying domain). Moreover, many other, well-known questionnaires also calculate total scores from different factors (Ruokolainen et al., 2016).

Conclusions

The neck pain-specific heath literacy questionnaire for office workers (The NHLOW) was developed and showed good validity and reliability for psychometric properties, including discriminative validity of the domains, internal consistency, and test-retest reliability. The NHLOW contained six questions with scores ranging from 0 to 24, with higher scores indicating higher health literacy. The utilization of health information was the only domain of health literacy identified in the present study to associate with the

development of non-specific neck pain in office workers. The NHLOW is easy and quick to complete by respondents. The NHLOW provides information that may help clinicians in making decisions about office workers' health literacy related to non-specific neck pain and educational content given to improve their health literacy.

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Conflict of interest: None.

Summary

This study developed a neck pain-specific heath literacy questionnaire for office workers**.** The neck pain-specific heath literacy questionnaire for office workers (The NHLOW) was developed, in which NHLOW consisted of six questions with scores ranging from 0 to 24, with higher scores indicating higher health literacy. The utilization of health information was the only domain of health literacy identified in the present study to associate with the development of non-specific neck pain in office workers. The NHLOW showed good validity and reliability for psychometric properties, including discriminative validity, internal consistency, and test-retest reliability. Future study will need to evaluate whether the NHLOW can predict office workers who are at risk of developing non-specific neck pain. Based on the hypothesis, the office workers with high health literacy scores possess better health behaviors, better self-management skill and lower risk to develop non-specific neck pain than those with low scores of health literacy. The predictive validity of the NHLOW need to be examined (Chapter V).

CHAPTER 5

A health literacy screening tool for non-specific neck pain of office worker: 1-year prospective cohort study

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Abstract

Background: Having a health literacy screening tool for neck pain with reasonable predictive ability is essential in providing information about individuals' risk of developing neck pain, which will guide health professionals and individuals in joint decisions on disease prevention. The aim of this study was twofold: 1) to evaluate the predictive validity of the neck pain-specific health literacy for office workers (NHLOW) questionnaire on non-specific neck pain in office workers, and 2) to compare the predictive validity of the NHLOW to the validity of the neck pain risk score for office workers (NROW) and a combination of NHLOW and NROW.

Method: At baseline, 342 healthy office workers filled out a self-administered questionnaire, the NHLOW and the NROW. The incidence of non-specific neck pain was collected every month for a 12-month period.

Results: Seven participants were lost during the follow-up period. There were 103 (30.7%) incident non-specific neck pain cases among 335 office workers. For the NHLOW, a cut-off score of less than or equal to 8 points (lower scores indicate lower health literacy) had a sensitivity of 57.3% and a specificity of 96.6%. The positive and negative predictive value were 88.1% and 83.6%, respectively. The area under the receiver-operating characteristic curve was 0.769 (95% CI 0.706 to 0.832). The NHLOW predicted non-specific neck pain more accurately than the NROW and the combination of the two screening tools.

Conclusion: The NHLOW is an acceptable screening tool to predict non-specific neck pain in office workers during 1-year follow-up, usable in occupational and primary care setting.

Key words: health literacy, non-specific neck pain, office worker, predictive validity

Introduction

Neck pain is prevalent among office workers (Côté et al., 2009) with 42%-69% of office workers reporting neck pain annually (De Loose et al., 2008;Janwantanakul et al., 2008) and 34%-49% developing new onset of neck pain every year (Korhonen et al., 2003;Hush et al., 2009). Neck pain is viewed as an episodic occurrence over a lifetime with variable recovery between episodes (Guzman et al., 2009). In a working population, 60% to 80% of workers with neck pain report neck pain one year later (Carroll et al., 2009). Neck pain causes considerable personal suffering due to pain, disability, and impaired quality of work and life in general, which can be a great socio-economic burden for both patients and society (Borghouts et al., 1999;Côté et al., 2009). In the Netherlands, the total cost of neck pain in 1996 was estimated at 686 million US dollars and there was productivity loss due to sickness absence in 32% of office workers with neck/shoulder symptoms in 2004 (Borghouts et al., 1999;van den Heuvel et al., 2007). In Thailand, the cost of neck pain among office workers was approximately 198 million US dollars in 2006 (Janwantanakul et al., 2005).

One effective management for musculoskeletal disorders (MSDs) is self-management based on the biopsycosocial model (Briggs et al., 2010;Briggs et al., 2011). The model is widely accepted for the development of chronic MSDs (Ferrari and Russell, 2003). Self-management requires patients to have adequate health literacy, which is an individual's ability to seek, understand, and utilize health information, in order to make judgments and take decisions regarding health care, disease prevention,

and health promotion to maintain and improve quality of life (Gong et al., 2007;Jordan et al., 2008). Sub-optimal health literacy in patients with chronic conditions, such as asthma, diabetes, and rheumatoid arthritis, has been found to be associated with poorer health conditions, knowledge, and limited self-management skills (Williams et al., 1995;Briggs et al., 2010;Briggs et al., 2011). Health literacy, therefore, has important implications for health programs and health service delivery models, particularly in the context of management of chronic health conditions (Briggs et al., 2010;Briggs et al., 2011).

Having a health literacy screening tool for neck pain is necessary for several reasons. First, such a screening questionnaire provides information about individuals' risk of developing neck pain, which will guide health professionals and individuals in joint decisions on disease prevention. Identification of persons at risk would also mean the enhancement of resource allocation to those most in need and most likely to benefit from it. Without a questionnaire as a screening tool, a large number of people would receive an intervention, which is likely to compromise its effectiveness. Second, due to their low cost, a questionnaire can be used at population level. Last, a health literacy questionnaire provides a guideline of patient education relating to neck pain, which persons should acquire to prevent neck pain. In a previous study, the Neck pain-specific Heath Literacy for Office Workers (NHLOW) was developed to assist health care providers in identifying office workers who are at risk of developing non-specific neck pain. The NHLOW comprised six questions involved with behaviors of office workers

during work and neck-related exercise (Areerak et al, submitted). Paksaichol et al (2014) also developed a screening tool to identify office workers at risk for developing non-specific neck pain. The screening tool consisted of three items related to the risk factors for neck pain in office workers. The neck pain risk score for office workers (NROW) had a sensitivity of 82% and specificity of 48% to detect non-specific neck pain in office workers (Paksaichol et al., 2014). The aim of the study was twofold: 1) to evaluate the predictive validity of the neck pain-specific health literacy for office workers (NHLOW) questionnaire on non-specific neck pain in office workers during a one-year follow-up, and 2) to compare the predictive validity of the NHLOW to the validity of the NROW (neck pain risk score for office workers) and a combination of NHLOW and NROW.

Methods

Study design

A prospective cohort study with one-year follow-up was conducted to evaluate the predictive validity on non-specific neck pain in office workers. Office workers without neck pain were evaluated at baseline and prospectively followed up every month for a 12-month period.

Subjects

The study recruited a convenience sample of office workers from ten large-scale enterprises in Bangkok. The enterprises participating in this study were infrastructure, bank, revenue, and four government ministries' head offices. Office workers were defined as those working in an office environment with their main tasks involving use of a computer, reading, phoning, making presentations, and participating in meetings. Other inclusion criteria were: age between 18 and 55 years, working full-time, and having at least five year of experience as office worker. Exclusion criteria included: reported neck pain in the previous six months with pain intensity greater than 30 mm on a 100-mm visual analog scale; reported pregnancy or a plan to become pregnant in the next 12 months; and history of trauma or accidents or surgery in the neck region. Participants who had been diagnosed with congenital anomaly of the spine, rheumatoid arthritis, infection of the spine and discs, ankylosing spondylitis, spondylolisthesis, spondylosis, tumor, systemic lupus erythymatosus, or osteoporosis were also excluded from the study. Potential participants were screened for the study using a self-administered questionnaire.

Office workers were approached and invited to participate in this study. They were informed about the objectives and details of the study and were asked to provide informed consent upon agreement to participate. At baseline, participants completed the self-administered questionnaire and Neck pain-specific Heath Literacy for Office Workers (NHLOW) questionnaire. Participants then received a self-administered diary

to record the incidence of neck pain and, if occurring, disability due to neck pain. The researcher collected the diaries from participants every month over a 12-month period. The study was approved by the Chulalongkorn University Human Ethics Committee.

Questionnaire

The self-administered questionnaire comprised three sections designed to gather data on individual, work-related physical, and psychosocial factors. Individual factors included gender, age, marital status, education level, frequency of regular exercise or sport, smoking habits, and number of driving hours per day. Work-related physical factors included current job position, number of working hours, years of working experience, frequency of using a computer, performing various activities during work, and rest breaks. The questionnaire also asked respondents to self-rate the ergonomics of their workstations (desk, chair, and position of monitor) and work environment conditions (ambient temperature, noise level, light intensity, and air circulation). Psychosocial factors were measured using the Job Content Questionnaire (Phakthongsuk, 2009). The questionnaire comprised 54 items in the following six areas: psychological demands (12 items), decision latitude (11 items), social support (8 items), physical demands (6 items), job security (5 items), and hazards at work (12 items). Each item had a four-point Likert-type response option ranging from 1, strongly disagree, to 4, strongly agree.

The NHLOW questionnaire comprised six items. Item 1-4 involve behaviors of office workers during work, while Item 5-6 concerns neck-related exercise. Each item had a five-point Likert-type response option ranging from 0, never perform, to 4, always perform, and the total score of the NHLOW ranges from 0 to 24. Higher scores indicate higher health literacy and lower risk to develop non-specific neck pain.

The neck pain risk score for office workers (NROW) comprised of three items. The first item was history of neck pain (0 (no) or 1 (yes)). The second item was adjustability of chair (0 (yes) or 1 (no)). The third item was perceived muscular tension and this item had a score on a scale of 0 (low), 1 (medium), and 2 (high). The total score of the NROW ranges from 0 to 4, with higher scores indicating higher risk of non-specific neck pain (Paksaichol et al., 2014).

The combination of NHLOW and NROW comprised nine items. For this combination the aforementioned scoring of NROW was reversed. Thus, the total score of the combined questionnaire ranges from 0 to 28, with higher scores indicating lower risk to develop non-specific neck pain.

Outcome measures

The area of neck was defined according to the picture of the body from standardized Nordic questionnaire (Kuorinka et al., 1987). Participants answered the yes/no question "Have you experienced any neck pain lasting >24 hours during the past month?" If they answer "Yes", follow-up questions about pain intensity measured by a visual

analogue scale, and the presence of weakness or numbness in the upper limbs were asked. Those who reported incidence of neck pain were also asked about their disability level as measured by the neck disability index (NDI) (Thai version) (Uthaikhup et al., 2011). The NDI contains 10 items on a five-point Likert scale, and the total score of the NDI ranges from 0 to 50, with higher scores indicating more severe disability.

In this study, participants were identified as cases if they answered "Yes" to the first question, report pain intensity greater than 30 mm on a 100-mm visual analogue scale, and had no weakness or numbness in the upper limbs. Participants were followed until they became symptomatic, withdrew from the study, or completed the 12-month follow-up.

Statistical analysis

Characteristics of subjects were described using means or proportions. The percentage of missing data for the individual, work-related physical, and work-related psychosocial factor categories were 0.3%. To retain the statistical power of the database, missing data were handled using the "hot-deck imputation" procedure. A respondent was selected at random from the total sample of the study, and the value for that person was assigned to the case for which information was missing. This procedure was conducted repeatedly for each missing value, until the dataset was complete (Aday and Cornelius, 2006).

The one-year incidence rate of non-specific neck pain was calculated as the proportion of new cases, defined as not having neck pain at baseline but reporting it during the 12-month period of follow-up.

The predictive validity of the NHLOW, NROW, and combination of NHLOW and NROW was examined. Each questionnaire was examined with its baseline total score as the predictor variable and new case of non-specific neck pain at one-year follow-up as the outcome variable. The receiver operating characteristics curve analyses (ROC) and the area under the receiver operating characteristics curve (AUC) were calculated to evaluate the discriminatory ability of the NHLOW, NROW, and combination of NHLOW and NROW. Sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) for several cut-off scores were calculated. The cut-off score that gave the maximum sum of sensitivity and specificity was taken as an optimum. The predictive validity of these three screening tools was compared. All statistical analyses were performed using SPSS for Window Version 17.0 (SPSS Inc, Chicago, IL.).

Results

Among the total of 2,510 workers who received the invitation, 847 responded. Of these, 505 were excluded because they did not meet the inclusion criteria, giving an eligible population of 342. A total of 342 workers agreed to participate (Figure.5.1). Three hundred and thirty-five workers were followed for one year, 7 (2%) participants were lost during the follow-up period due to pregnancy (n=1), job transfer (n=4), and

withdrawal (n=2). All participants were office workers and aged 20 to 55 years. Almost half of the participants (46.4%) was in the age between 30 and 39 years. Three-quarter of the participants (74.6%) was female and most of the participants reported at least bachelor's degree (90.3%). Table 5.1 presents the baseline characteristics of the study population. Over the 12-month follow-up, the incidence of non-specific neck pain in the sample population was 30.7% (103/335) with mean (SD) VAS and NDI scores of 44.3 (11.8) mm and 6.7 (3.8), respectively.

The effect of missing data on the findings of the present study was investigated by comparing the results before and after performing the 'hot-deck imputation' procedure, and no difference was found. Therefore, the results after the 'hot-deck imputation' procedure are presented here.

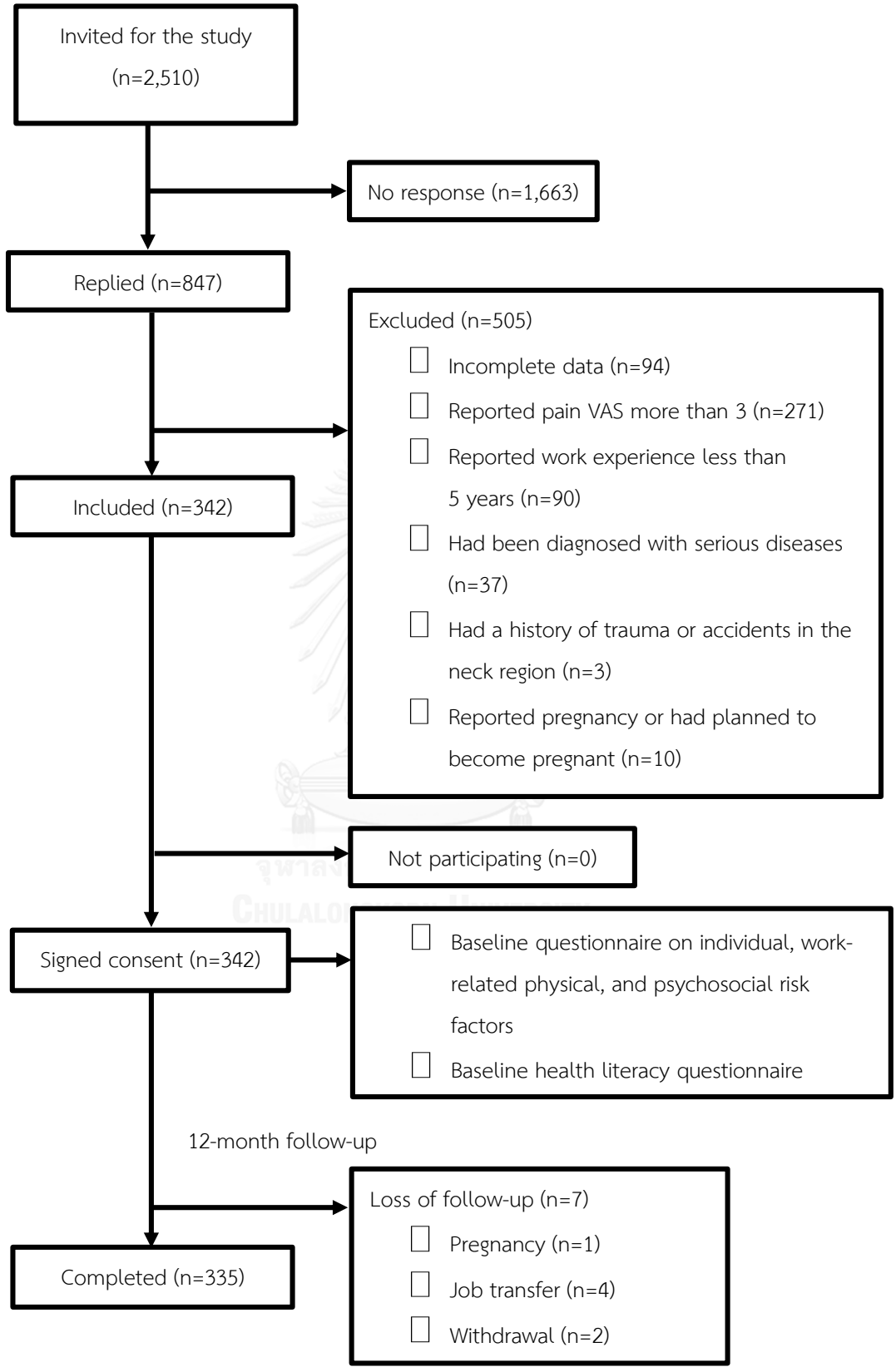

Figure 5.1 Flowchart of participants for the study

Table 5.1 Characteristics of study population (n=342)

Characteristic	N(%)	Mean ± SD
Demographic characteristics		
Gender		
Male	87 (25.4)	
Female	255 (74.6)	
Age (years)		
20-29	20 (5.9)	
30-39	159 (46.4)	
40-49	115 (33.5)	
≥50	48 (14.2)	
Education		
Lower than Bachelor's degree	23 (6.7)	
Bachelor's degree	195 (57)	
Higher than Bachelor's degree	124 (36.3)	
Exercise frequency in the past 12 months		
Never	66 (19.3)	
Occasionally	203 (59.4)	
Regularly	71 (20.8)	
Not sure	2 (0.6)	
History of neck pain		
Yes	146 (42.7)	
No	196 (57.3)	

Occupational-related characteristics	
Duration of employment (years)	14.34 ± 7.48
Working hours per day (hours per day)	7.69 ± 1.07
Working days per week (days per week)	5.0 ± 0.5
Psychosocial characteristics	
Job control	36.0 ± 4.53
Psychological demand	32.32 ± 4.78
Physical demand	12.89 ± 2.68
Job security	17.01 ± 1.1
Social support	37.57 ± 5.2
Hazards at work	15.73 ± 3.36

In order to predict non-specific neck pain of office workers, the optimal cut-off score for the NHLOW was less than or equal to 8 (sensitivity, 57.3%; specificity, 96.6%; PPV, 88.1%; and NPV, 83.6%) (Table 5.2). The AUC was 0.769 (95%CI, 0.706-0.832). The optimal cut-off score for the NROW was greater than or equal to 2 (sensitivity, 55.3%; specificity, 76.3%; PPV, 50.9%; and NPV, 79.4%) (Table 5.3). The AUC was 0.658 (95%CI, 0.593-0.724). For the combination of NHLOW and NROW, the optimal cut-off score was less than or equal to 11 (sensitivity, 53.4%; specificity, 91.4%; PPV, 73.3%; and NPV, 81.9%) (Table 5.4). The AUC was 0.724 (95%CI, 0.659-0.789). The NHLOW showed better sensitivity and specificity compared to the NROW and the combination of the two screening tools. Also, the positve and negative predictive values of the NHLOW were

higher than those of the NROW and the combination of the NHLOW and NROW. Moreover, the NHLOW showed better AUC value compared to the NROW and the combination of the two screening tools (Table 5.5).

Table 5.2 Sensitivity and specificity of each cut-off value for NHLOW score

Cut-off value	Sensitivity	Specificity	PPV	NPV
≤5	4.9	100	100	70.3
≤ 6	17.5	99.6	94.7	73.1
≤ 7	31.1	97.8	86.5	76.2
≤ 8	57.3	96.6	88.1	83.6
≤ 9	57.3	83.6	60.8	81.5
≤ 10	57.3	70.7	46.5	78.8
≤ 11	65.0	56.0	39.6	78.3

PPV, positive predictive value; NPV, negative predictive value

Table 5.3 Sensitivity and specificity of each cut-off value for NROW score

Cut-off value	Sensitivity	Specificity	PPV	NPV
≥ 1	85.4	40.9	39.1	86.4
≥ 2	55.3	76.3	50.9	79.4
≥ 3	25.2	93.5	63.4	73.8
≥ 4	1.9	99.1	50.0	69.5

PPV, positive predictive value; NPV, negative predictive value

Table 5.4 Sensitivity and specificity of each cut-off value for the combination of NHLOW and NROW score

Cut-off value	Sensitivity	Specificity	PPV	NPV
≤ 8	17.5	100	100	73.2
≤ 9	31.1	100	100	76.6
≤ 10	40.8	96.6	84.0	78.6
≤ 11	53.4	91.4	73.3	81.9
≤ 12	58.3	83.6	61.2	81.5
≤ 13	60.2	70.7	47.7	80.0
≤ 14	70.9	59.5	43.7	82.1

PPV, positive predictive value; NPV, negative predictive value

Table 5.5 Predictive validity for best cut-off value of each screening tool

Screening tool	Sensitivity	Specificity	PPV	NPV	AUC (95%CI)
NHLOW	57.3	96.6	88.1	83.6	0.769 (0.706-0.832)
NROW	55.3	76.3	50.9	79.4	0.658 (0.593-0.724)
combined NHOW and NROW	53.4	91.4	73.3	81.9	0.724 (0.659-0.789)

PPV, positive predictive value; NPV, negative predictive value; AUC, the area under the receiver operating characteristics curve

Discussion

The main purpose of this study was to evaluate the predictive validity of the health literacy screening tool to identify office workers at risk of developing non-specific neck pain. The results demonstrated that the NHLOW had acceptable ability to predict incident non-specific neck pain in office workers, and that the NHLOW predicted neck pain more accurately than the NROW and the combination of the two screening tools.

This study found the annual incidence of non-specific neck pain regardless of disability level in office workers to be 30.7%. Previous epidemiological studies reported

the annual incidence of neck pain in office workers to be in the range of 26.7% to 28% (Paksaichol et al., 2014;Sihawong et al., 2014). Our study and previous studies defined incident cases as those who reported neck pain lasting more than one day and participants were required to report pain greater than 30 mm on a 100-mm VAS and no weakness or numbness in the upper limbs. The discrepancy between ours and previous studies may be due to the different years of experience as office workers. The participants in this study had at least five years of experience as office workers, but the previous studies had at least one year. Côté et al (2009) suggested that long duration of employment was a potential risk factor of experiencing neck pain (Côté et al., 2009). Consequently, it is likely that more subjects were identified as symptomatic cases in the present study.

The NROW of current study was similar to the study of Paksaichol et al (Paksaichol et al., 2014), who developed the screening tool to identify office workers at risk for developing non-specific neck pain. They reported that the sensitivity was 82%, specificity was 48% and PPV was 29%. Based on the results, they concluded that the NROW questionnaire was suitable to use for ruling out office workers at low risk when the test is negative. In the other hand, the items of NHLOW related to the behaviors as working and exercise of office workers, and indicated that it was suitable to identify office workers at high risk when the test is positive (sensitivity of 57.3%; specificity of 96.6%; and PPV of 88.1%). Neck pain in workers has a multifactorial origin, the self-management based on the biopsycosocial model is one effective

management for neck pain in workers (Côté et al., 2009;Briggs et al., 2010;Briggs et al., 2011). Providing knowledge relate to risk factors of problem was a part of a self-management and lead to awareness with regard to risk factors provoking problem of health. Participants became more awareness of health that they should learn to cope with the problem and change their behavior (Hutting et al., 2015;Hutting et al., 2017). The study of Bernaards et al (2008) developed a workstyle intervention for computer workers, which focused on behavioral change with regard to body posture, workplace adjustment, breaks, and coping with high work demands. This intervention was effective in improving recovery from neck/shoulder symptoms and reducing pain in the long term (12 months) compared to usual care, whereas no effects were found after 6 months (Bernaards et al., 2007;Bernaards et al., 2008;Hutting et al., 2013). By positive predictive value, the results of current study showed the NHLOW identifies office workers at risk for developing non-specific neck pain more accurately than the NROW, may be due to the NHLOW focusing behavior of office workers to identify risk for developing non-specific neck pain. Therefore, it may be mentioned that if office workers are exposed to the risk factor for developing non-specific neck pain, but they behave themselves to prevent or encourage their health, it can decrease risk for developing non-specific neck pain.

Selection of an optimal cut-off point largely depends on the purpose of using the risk score and requires knowledge of the sensitivity, specificity, PPV, and NPV. In the present study, a cut-off score of ≤ 8 provided the maximum sum of sensitivity and

specificity. The sensitivity was 57.3%; consequently, the false-negative rate was 42.7%. A high false-negative would result in greater medical expenses for a disease later on because those high-risk workers would be missed. With a cut-off score of ≤ 8, the specificity was 96.6%. Subsequently, the false-positive rate was 3.4%, meaning that only 3.4% of low-risk score office workers will be identified as positive. Because these low-risk office workers may not have received any benefits from any preventive intervention given to them, a high false-positive rate would cost money and time. One needs to consider the expected consequences of missing a person at risk (false-negative) as opposed to including a person in an intervention, although they are not at risk (false-positive). For example, with limited resources, one may want to increase the likelihood of including those who are truly at risk of developing non-specific neck pain. In that case, a screening tool with high specificity would be preferable to one with high sensitivity. In contrast, to significantly reduce the number of office workers developing non-specific neck pain, one may prefer a screening tool with high sensitivity to one with high specificity to ensure that as many of those high-risk workers will receive preventive intervention as possible. The AUC is an index of the goodness of the diagnostic scale, and the perfect scale has an AUC of 1.0. The interpretation of the AUC values follows the suggestions by Hosmer and Lemeshow (Hosmer and Lemeshow, 2000). An AUC of 0.5 indicates no discrimination, 0.7 ≤ AUC < 0.8 indicating acceptable discrimination, 0.8 ≤ AUC < 0.9 indicating excellent discrimination, and AUC ≥ 0.9 indicating outstanding discrimination (Hosmer and Lemeshow, 2000). In this study,

the AUC was 0.769 (95%CI, 0.706-0.832) demonstrating the NHLOW has acceptable ability to discriminate office workers with and without future non-specific neck pain.

In practice, predictive values may be more useful than sensitivity and specificity rates for applying the screening tool in clinical decision making, because predictive values indicate the probability that the result is correct (Fritz and Wainner, 2001). The results show that the predictive value of the cut-off point of ≤ 8 was high for the PPV and low for the NPV. The PPV was 88.1%, indicating that 88.1% of office workers with a score of ≤ 8 are actually at risk of developing non-specific neck pain. The NPV was 83.6%, meaning that 83.6% of office workers with a score of ≥ 8 were not at risk for developing non-specific neck pain. Based on the findings, the screening tool in the current study seems to be more suitable for ruling in those with a high risk of developing non-specific neck pain, rather than for ruling out healthy office workers with a low risk of developing non-specific neck pain. Although the PPV and NPV provide useful information for interpreting the screening tool, they are highly dependent on the prevalence of the condition of interest in the sample: the PPV will be lower and the NPV will be higher in samples with a low prevalence of the condition (Fritz and Wainner, 2001).

In addition, this study compared the ability of the NHLOW, NROW, and combination of the two screening tools to predict non-specific neck pain in office workers. The NHLOW showed better sensitivity, specificity, PPV, and NPV compared to the NROW and combination of the two screening tools. The results indicated that the

NHLOW was more often correct (PPV 88.1% and specificity 96.6%) than the NROW (PPV 50.9% and specificity 76.3%) and combination of NHLOW and NROW (PPV 73.3% and specificity 91.4%). The ROC analysis also showed that the NHLOW explained significantly more variance under the curve than the NROW and combination of NHLOW and NROW. The results showed that the NHLOW was able to predict non-specific neck pain more accurately than the NROW and combination of the two screening tools. The screening tool in present study is a potentially useful tool for helping clinicians to identify office workers at risk of developing non-specific neck pain. Identification of persons at risk would also mean the enhancement of resource allocation to those most in need and most likely to benefit from preventive intervention. Without a screening tool, a large number of people who did not need the intervention would likely receive it, which is likely to compromise its effectiveness (Moons et al., 2009). The NHLOW is easy to administer and can be carried out within a short space of time (approximately 5 min) because it requires a respondent to answer just six questions. Therefore, it is suitable for utilization in primary health care and workplace settings, where full clinical examinations are impractical due to limited personnel and time.

Strengths and limitations

A major strength of this study is its prospective design, which allows for the evaluation of health literacy score for predicting non-specific neck pain in office workers. In

addition, a large sample was successfully followed up for one year (98%), which enabled robust results for determining the model's goodness of fit. However, at least three limitations are noteworthy. First, the use of a convenience sample restricts the external validity of this study. Thus, generalization of the results from this study to other working populations should be made with caution. Second, the diagnosis of neck pain was subjective, which may have led to inaccuracy. Another important drawback of self-reported data is the risk of overestimation of exposure (van den Heuvel et al., 2005). Furthermore, some workers may be more sensitive to any somatic disturbance than others. As a result, there is a risk of underreporting or overreporting of the incidence. Future studies should consider inclusion of objective information from physical examination. Third, the cut-off score may be very specific to the population study. Thus, extrapolation of these results to other populations should be made with caution.

Conclusion

Based on the results of the current study, the NHLOW showed acceptable predictive validity. Its area under the receiver operating characteristics curve indicated acceptable ability to discriminate office workers with and without future non-specific neck pain. Further research should identify the office workers at risk of developing neck pain and provide a guideline of changing behavior by using the NHLOW questionnaire.

Competing Interests

The authors declare that they have no competing interests.

Authors' Contributions

The authors have contributed in the following ways: KA provided concept/research design, data collection, data analysis and manuscript writing. AJvdB provided concept/research design, data analysis and manuscript writing. PJ provided concept/research design, data analysis and manuscript writing. All authors read and approved the final manuscript.

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Summary

This study evaluated the predictive validity of the health literacy screening tool to identify office workers at risk of developing non-specific neck pain**.** The neck pain-specific heath literacy questionnaire for office workers (The NHLOW) showed acceptable predictive validity. Its area under the receiver operating characteristics

curve indicated acceptable ability to discriminate office workers with and without future non-specific neck pain. The risk factors of neck pain should be classified as either modifiable or not modifiable, depending of the feasibility of changing that factor. Of particular importance are modifiable factors that could have a large positive impact on the prevention and recovery of neck pain The NHLOW was considered modifiable factors that could have impact on the prevention and recovery of neck pain. This study showed that NHLOW can predict office worker who are at risk to develop non-specific neck pain. In addition, we hypothesized that office workers with higher scores of NHLOW have better health behaviors, which may enable them to show shorter duration of recovery from non-specific neck pain. The next study (Chapter VI) explored the duration of recovery from non-specific neck pain and evaluated whether the NHLOW can predict duration of recovery from non-specific neck pain.

CHAPTER 6

Recovery from non-specific neck pain in office workers

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Abstract

Background and Objective: Neck pain is one of the most common musculoskeletal problems in office workers. Neck pain has an episodic course with varying time to recovery. Identification of individuals likely to recover is important to be able to distinguish those with neck pain who will recover rapidly from those who will develop persisting pain and disability. However, there has been little study of the recovery duration among those suffering from non-specific neck pain. The aim of this study was twofold: 1a) to explore the duration of recovery from non-specific neck pain in office workers, and 1b) to investigate the relation between recovery duration and age of office workers, and 2) to evaluate whether the NHLOW can predict duration of recovery from non-specific neck pain in office workers.

Methods**:** At baseline, 342 healthy office workers filled out a self-administered questionnaire and the NHLOW. For the 103 office workers who reported non-specific neck pain, information was collected on pain intensity and disability every month for a 12-month period. The time to recovery was measured from the onset of neck pain to full recovery. The 103 office workers were devided into two groups by using the NHLOW score. Kaplan–Meier survival curves were use to describe the median time to recovery of the participants. The survival curves of the two NHLOW groups were compared using Cox regression analysis.

Results: From those with non-specific neck pain, 75 and 28 participants did and did not report recovery, respectively. The median time to recovery from neck pain was 2

months. The duration of recovery was not significantly related with age of participants. There was no significant difference in time to recovery from neck pain between the NHLOW low-score group and the high-score group.

Conclusion: This study showed that the NHLOW was unable to predict duration of recovery from non-specific neck pain in office workers.

Key words: health literacy, non-specific neck pain, office worker, recovery, prognosis

Introduction

Neck pain is prevalent among office workers with 42%-69% of office workers reporting neck pain and 34%-49% of office workers developing new onset of neck pain every year (Korhonen et al., 2003;De Loose et al., 2008;Janwantanakul et al., 2008;Côté et al., 2009;Hush et al., 2009). Although the pain levels of neck pain may improve over time, up to 50% of neck pain patients do not recover completely over a 1-year period. Moreover, three-quarters of all patients who recovered from neck pain will relapse within 1-5 years. For the majority of those with neck pain (50%–80%), the course seems to be persistent or recurrent (that is, with remissions and exacerbations) over years and months (Carroll et al., 2008). In the Netherlands, the total cost of neck pain in 1996 was estimated at 686 million US dollars (Borghouts et al., 1999;van den Heuvel et al., 2007). In Thailand, the cost of neck pain among office workers was approximately 198 million US dollars in 2006 (Janwantanakul et al., 2005). Neck pain is usually associated with significant disability and chronicity, leading to personal suffering and impaired quality of work and life in general (Borghouts et al., 1999;Côté et al., 2009).

An important component of clinical decision making for any condition is prognosis (Walton et al., 2013). Prognosis enables estimation of the probability that a state of health, such as change in pain or disability, will occur in the future, and are ideal for educating patients regarding anticipated outcome as well as prioritizing individuals for intervention (McGinn et al., 2000;Moons et al., 2009). From a review it appeared that there were a few studies focusing on prognostic factors related to neck

pain. Most frequently reported prognostic factors are age, gender, a long duration of the current episode of neck pain, a previous history of neck pain problems, a past history of other musculoskeletal disorders, exercise, and physical job demands (McLean et al., 2007;Carroll et al., 2008;Vos et al., 2008;Walton et al., 2013). Guzman et al (2009) described neck pain as an episodic occurrence over a lifetime with variable recovery in between episodes (Guzman et al., 2008). There are indications that the clinical course of neck pain is similar to that of low back pain, with a pattern of intermittent episodes of pain and disability over a period of years (Croft et al., 2001). Leaver et al (2013) found that 52% of neck pain participants experienced full recovery from neck pain during the 3-month follow-up period; the median time from commencement of treatment to recovery of pain was 45 days. Of those who recovered, 55% and 75% recovered within 3 weeks and 4 weeks of commencing treatment, respectively (Leaver et al., 2013).

Neck pain in workers is assumed to be of multifactorial origin. The risk factors of neck pain should be classified as either modifiable or not modifiable, depending of the feasibility of changing that factor. Of particular importance are modifiable factors that could have a large positive impact on the prevention and recovery of neck pain (Guzman et al., 2008). One effective way of dealing with musculoskeletal disorders is self-management based on the biopsychosocial model (Briggs et al., 2010;Briggs et al., 2011). The model is widely accepted in chronic musculoskeletal disorders care to improve self-efficacy and wellness behaviors (Lorig et al., 1993;Ferrari and Russell,

2003). Self-management requires patients to have adequate health literacy. The Neck pain-specific Heath Literacy for Office Workers (NHLOW) is a health literacy questionnaire for office workers. The NHLOW was developed to identify office workers at risk for developing non-specific neck pain. The total score of the NHLOW ranges from 0 to 24, with higher scores indicating higher health literacy and lower risk to develop non-specific neck pain. Office workers with high health literacy scores also possess better health behaviors, health outcomes, and self-management skill than those with low scores of health literacy (Areerak et al, submitted). Moreover, item 1-6 of the NHLOW consider modifiable factors that could have impact on the prevention and recovery of neck pain. Our earlier study showed that NHLOW can predict office worker who are at risk to develop non-specific neck pain. In the present study, we hypothesized that office workers with higher scores of NHLOW have better health behaviors, which may enable them to show shorter duration of recovery from non-specific neck pain. The aim of this study in office workers was twofold: 1a) to explore the duration of recovery from non-specific neck pain and 1b) to investigate the relation between recovery duration and age, and 2) to evaluate whether the NHLOW can predict duration of recovery from non-specific neck pain.

Methods

Study design

A prospective cohort study was conducted to evaluate the predictive value of the NHLOW on recovery time from non-specific neck pain in office workers. Office workers without neck pain at baseline were prospectively followed up every month for a 12-month period, and workers reporting non-specific neck pain in this period were included.

Subjects

The study recruited a convenience sample of office workers from large-scale enterprises in Bangkok. Office workers were defined as those working in an office environment with their main tasks involving use of a computer, reading, phoning, making presentations, and participating in meetings. Other inclusion criteria were: age between 18 and 55 years, working full-time, and having at least five year of experience as office worker. Exclusion criteria included: reported neck pain in the previous six months with pain intensity greater than 30 mm on a 100-mm visual analog scale; reported pregnancy or a plan to become pregnant in the next 12 months; and history of trauma or accidents or surgery in the neck region. Participants who had been diagnosed with congenital anomaly of the spine, rheumatoid arthritis, infection of the spine and discs, ankylosing spondylitis, spondylolisthesis, spondylosis, tumor, systemic

lupus erythymatosus or osteoporosis were also excluded from the study. Potential participants were screened for the study using a self-administered questionnaire.

Office workers were approached and invited to participate in this study. They were informed about the objectives and details of the study and were asked to provide informed consent upon agreement to participate. At baseline, participants completed the self-administered questionnaire. Participants then received a self-administered diary to record the incidence of neck pain and, if occurring, disability due to neck pain. The researcher collected the diaries from participants every month over a 12-month period. The study was approved by the Chulalongkorn University Human Ethics Committee.

Questionnaire

The self-administered questionnaire comprised three sections designed to gather data on individual, work-related physical and psychosocial factors. Individual factors included gender, age, marital status, education level, frequency of regular exercise or sport, smoking habits, and number of driving hours per day. Work-related physical factors included current job position, number of working hours, years of working experience, frequency of using a computer, performing various activities during work, and rest breaks. The questionnaire also asked respondents to self-rate the ergonomics of their workstations (desk, chair and position of monitor) and work environment

conditions (ambient temperature, noise level, light intensity and air circulation). Psychosocial work characteristics were measured using the Job Content Questionnaire (Phakthongsuk, 2009). The questionnaire comprised 54 items in the following six areas: psychological demands (12 items), decision latitude (11 items), social support (8 items), physical demands (6 items), job security (5 items), and hazards at work (12 items). Each item had a four-point Likert-type response option ranging from 1, strongly disagree, to 4, strongly agree.

The Neck pain-specific Heath Literacy in Office Workers (NHLOW) questionnaire comprised six items. Item 1-4 involve behaviors of office workers during work, while Item 5-6 concern neck-related exercise. Each item had a five-point Likert-type response option ranging from 0, never perform, to 4, always perform, and the total score of the NHLOW ranges from 0 to 24. The cut-off score was less than or equal to 8. Higher scores than 8 indicate a higher health literacy and a lower risk to develop non-specific neck pain than lower scores.

Outcome measure

The area of neck was defined according to the picture of the body from standardized Nordic questionnaire (Kuorinka et al., 1987). Participants answered the yes/no question "Have you experienced any neck pain lasting >24 hours during the past month?" If they answer "Yes", follow-up questions about pain intensity measured by a visual

analogue scale, and the presence of weakness or numbness in the upper limbs were asked. Those who reported incidence of neck pain were also asked about their disability level as measured by the neck disability index (NDI) (Thai version) (Uthaikhup et al., 2011). The NDI contains 10 items on a 5-point Likert scale, and the total score of the NDI ranges from 0 to 50, with higher scores indicating more severe disability.

In this study, participants were included if they were identified as cases, i.e. if they answered "Yes" to the first question, reported pain intensity greater than 30 mm on a 100-mm visual analogue scale, and had no weakness or numbness in the upper limbs. Participants were followed until they completed the 12-month follow-up, or withdrew from the study. For the outcome measure of recovery from non-specific neck pain, this study sampled two dimension of recovery; pain intensity and disability. When participants reported being pain-free and without disability (VAS=0, NDI=0), they were considered "recovered" at the beginning of that month. Hence, the outcome measure was time to recovery, i.e. the duration from the onset of neck pain to the recovery.

Statistical analysis

Characteristics of subjects were described using means or proportions. The percentage of missing data for the individual was 0.9%. To retain the statistical power of the database, missing data were handled using the "hot-deck imputation" procedure. A respondent was selected at random from the total sample of the study, and the value

for that person was assigned to the case for which information was missing. This procedure was conducted repeatedly for each missing value, until the dataset was complete

Kaplan–Meier survival curves were use to describe the median time to recovery of the participants. The participants who were lost to follow-up were censored at the mid-point between the last completed follow-up and the next follow-up time (Dudley et al., 2016). Participants not recovered after 12 months were censored at this point. The correlations of the recovery time from non-specific neck pain and age of the participants was analyzed using Pearson correlation. The participants were divided into two groups by using the NHLOW score, the low-score group had an NHLOW score lower than or equal 8, and the high-score group had an NHLOW score higher than 8. The survival curves of these two groups were compared using Cox regression analysis. Firstly, Cox regression analyses were used to identify the association between group of NHLOW score and recovery time from non-specific neck pain. Secondly, the participants' age, gender, a previous history of neck pain, a previous history of neck muscle tension, a previous history of low back pain, exercise, psychosocial work characteristics, pain intensity and disability at the first neck pain episode were considered to be confounders and were forced into the multivariate analysis. All statistical analyses were performed using SPSS for Window Version 17.0 (SPSS Inc, Chicago, IL.).

Results

Among the total of 2,510 workers who received the invitation, 847 responded. Of these, 505 were excluded because they did not meet the inclusion criteria, giving an eligible population of 342. A total of 342 workers agreed to participate (Figure.6.1), and 335 of those were followed for one year. There were 103 (30.7%) participants who reported non-specific neck pain with mean (SD) VAS and NDI scores of 4.44 (1.19) and 6.79 (3.76), respectively. Participants were all office worker and aged 26 to 55 years. The participants aged between 30 and 39 years (52.4%) showed the highest proportion with an episode of non-specific neck pain. Those aged between 26 and 29 years (5.8%) showed the lowest proportion with an episode of non-specific neck pain. Four-fifths of the participants with non-specific neck pain (82.5%) was female. Table 6.1 presents the baseline characteristics of the 103 office workers who reported non-specific neck pain. During the remaining follow-up, 75 participants reported recovery from non-specific neck pain. Twenty eight participants (27.2%) who had not reported recovery from non-specific neck pain were censored at the time of last completed follow-up. Table 6.2 shows the NHLOW score at baseline, 6-month and 12-month of all 103 office workers.

Table 6.1 Characteristics of the study population of office workers with non-specific neck pain (n=103).

Characteristic	N(%)	Mean ± SD
Demographic characteristics		
Gender		
Male	18 (17.5)	
Female	85 (82.5)	
Age (years)		38.94 ± 7.5
26-29	6 (5.8)	
30-39	54 (52.4)	
40-49	29 (28.2)	
≥50	14 (13.6)	
At the first neck pain episode		
Pain intensity		4.44 ± 1.19
Disability		6.79 ± 3.76
Education		
Lower than Bachelor's degree	7 (6.8)	
Bachelor's degree	61 (59.2)	
Higher than Bachelor's degree	35 (34)	
Exercise frequency in the past 12 months		
Never	22 (21.4)	
Sometimes	63 (61.2)	
Frequently	18 (17.5)	
History of neck pain		
Yes	70 (68)	
No	33 (32)	
History of neck muscle tension		
Never	40 (38.8)	
Sometimes	39 (37.9)	

Frequently	24 (23.3)	
Work-related characteristics		
Duration of employment (years)		13.41 ± 7.54
Working hours (hours per day)		7.69 ± 1.14
Working days (days per week)		5.0 ± 0.5
Psychosocial work characteristics		
Job control		36.14 ± 4.80
Psychological demand		33.85 ± 5.23
Physical demand		13.48 ± 2.88
Job security		17.12 ± 1.14
Social support		37.56 ± 5.64
Hazards at work		16.00 ± 3.20

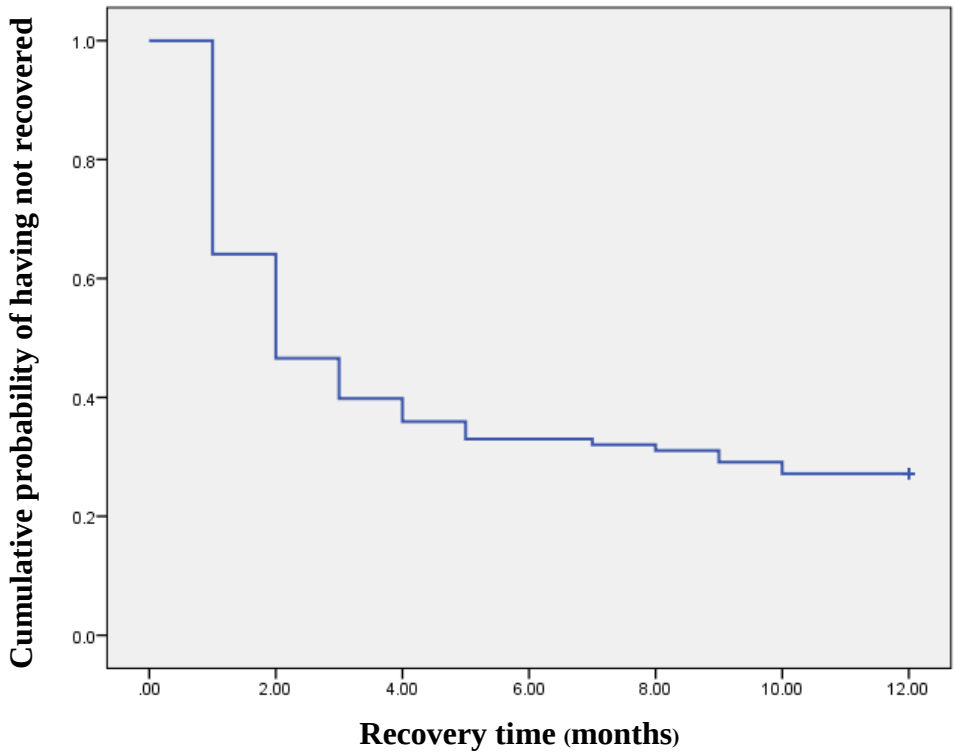

Figure 6.1 Kaplan-Meier estimate of the time to recovery from non-specific neck pain in office workers (n=103).

Recovery from onset non-specific neck pain, determined by recovery on pain intensity and disability took a median time of 2 months (range: 1 to 10 months). The Kaplan-Meier survival curve showed that the cumulative probability of recovery was 35.9% at 1 month. After 2 months the probability was 53.4%, and this increased to 72.8% at 10 months (Figure 6.1). Aging participants (aged 45 years and older) showed a median duration of recovery from non-specific neck pain of 2 months, which was also 2 months for those younger than 45 years. The duration of recovery was not significantly related with age of participants (the correlation coefficient was 0.074). The Cox regression for recovery time of non-specific neck pain showed that the median time to recovery from neck pain in the high-score group was 2 months, and in the low-score group this was 3 months. When comparing the low-score group and the high-score group, there was no significant difference in time to recovery from neck pain (Figure 6.2 and Table 6.3 unadjusted). After adjustment for age, gender, a previous history of neck pain, a previous history of neck muscle tension, a previous history of low back pain, exercise, psychosocial work characteristics, pain intensity and disability at the first neck pain episode, there still was no association between the group of NHLOW and duration of recovery (Table 6.3).

Table 6.2 The mean score of the NHLOW at baseline, 6-month and 12-month (n=103).

	Baseline (Mean ± SD)	6-month (Mean ± SD)	12-month (Mean ± SD)
Score of NHLOW	9.84 ± 3.68	10.86 ± 3.29	10.68 ± 3.44

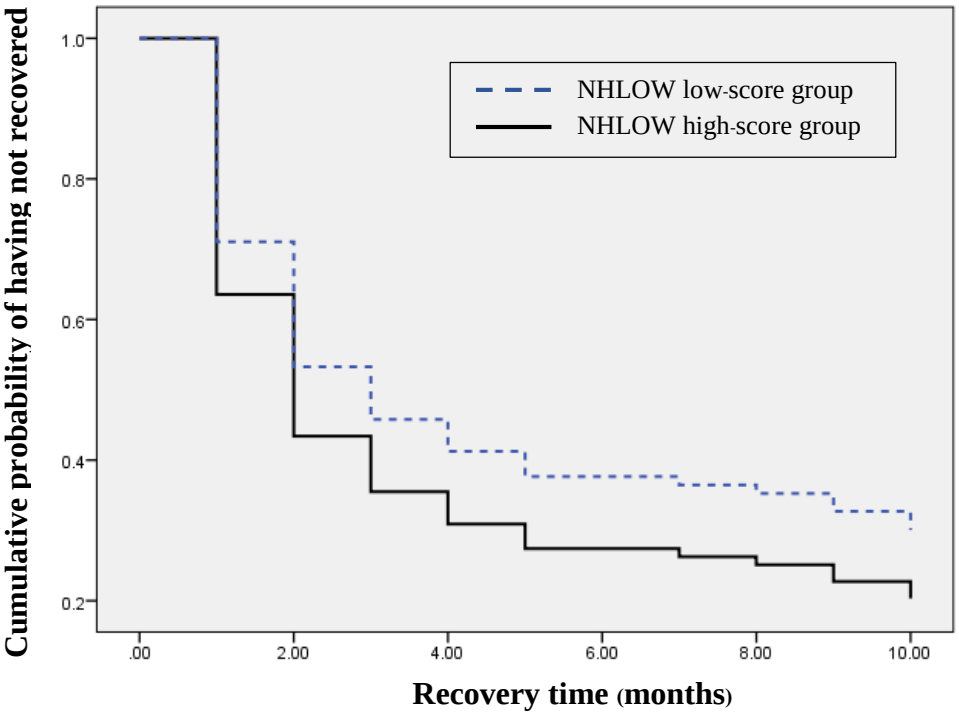

Figure 6.2 Kaplan-Meier estimate of the time to recovery from non-specific neck pain in office workers in the NHLOW high-score group (n=44) and NHLOW low score group (n=59).

Table 6.3 Cox regression for recovery time from non-specific neck pain with hazard ratios (HR) and 95% confidence intervals.

Variable	Unadjusted		Adjusted	
	HR (95%CI)	P value	HR (95%CI)	P value
Group of NHLOW				
Low-score group	0.881 (0.56 to 1.40)	0.587	0.931 (0.57 to 1.52)	0.776
High-score group	1.000		1.000	
Age			0.971 (0.94 to 1.01)	0.122
Gender			0.835 (0.41 to 1.70)	0.619
History of neck pain			1.342 (0.70 to 2.61)	0.387
History of low back pain			0.847 (0.44 to 1.64)	0.624
History of neck muscle tension				
Frequently			0.808 (0.40 to 1.66)	0.561
Sometimes			0.496 (0.25 to 1.00)	0.051
Never			1.000	

Variable	Unadjusted		Adjusted	
	HR (95%CI)	P value	HR (95%CI)	P value
Exercise frequency in the past 12 months				
Never			0.538 (0.24 to 1.21)	0.132
Sometimes			0.667 (0.33 to 1.33)	0.250
Frequently			1.000	
Psychosocial work characteristics				
Decision latitude			1.014 (0.95 to 1.09)	0.692
Psychological demands			0.978 (0.92 to 1.04)	0.458
Physical demands			0.986 (0.88 to 1.10)	0.801
Job security			1.242 (0.94 to 1.64)	0.122
Social support			0.994 (0.94 to 1.06)	0.853
Hazards at work			0.962 (0.88 to 1.05)	0.382
At the first neck pain episode				
Pain intensity			0.904 (0.72 to 1.14)	0.384
Disability			1.001 (0.94 to 1.07)	0.980

Discussion

At the end of follow-up, 72.8% of non-specific neck pain office workers reported recovery from their pain. The median time from the onset of neck pain to the recovery was 2 months. The NHLOW did not predict duration of recovery from non-specific neck pain in office workers. Leaver et al reported that the median recovery time of neck pain was 45 days, which was shorter than in this study (Leaver et al., 2013). However, there are difficulties comparing the recovery time between our study and their study because their participants received physical therapy treatment at four sessions over two weeks. In contrast, our participants did not receive treatment. In the study of Leaver et al, the participants who were considered to recover from neck pain remained mean pain intensity of 1.5 (SD 1.8) and mean disability of 5.4 (SD 6.4) at the end of their 3-month follow-up (Leaver et al., 2013), while recovery in our study was considered to be pain free and without disability (VAS=0, NDI=0). However, our study reported median time to recovery to be quite similar to the study of Henschke et al among acute low back pain patients in terms of pain intensity (Henschke et al., 2008). They reported that median time to recovery from pain after an episode of acute low back pain was 58 days (range: 53 to 63 days) (Henschke et al., 2008). Our study and the study of Henschke et al defined recovery as participants who are pain free. Henschke et al defined "complete recovery" as participants who reported to be pain free, without disability and having returned to work. However, they found that the survival curves for recovery from pain and complete recovery were similar. This may

indicate that neck pain and low back pain are musculoskeletal disorders that have rather similar time to recovery**.** In addition, this study found no association between age and duration of recovery time from non**-**specific neck pain**.** The results were similar to the study of Borghouts et al, which described no association between age and worse prognosis, although they did find an association between a worse prognosis for women over 50 years **(**Borghouts et al**.,** 1998**).**

There was no association between the group of NHLOW and duration of recovery from non-specific neck pain in office workers. Nevertheless, the questions of the NHLOW consider modifiable factors that could have a positive impact on the recovery of neck pain; the NHLOW is health literacy questionnaire for office workers (Guzman et al., 2008). In the same way, the patients who have adequate health literacy will encourange self-management for dealing with musculoskeletal disorders. The self-management based on the biopsychosocial model focus on encouraging patients to be involved with their own treatment as well as preparing patients to manage their health behaviors (Newman et al., 2004;McGowan, 2005;Briggs et al., 2010;Briggs et al., 2011). The study of Walton et al suggested that prognosis requires knowledge of factors across biopsychosocial domains and generally high importance for prognosis involves psychological and behavioral factors beyond purely physical signs (Walton et al., 2013). Likewise, Question 1-4 of NHLOW focus on behaviors of office workers during work. The study of Bernaards et al (2007) showed that behavioral change was effective in improving recovery from neck/shoulder symptoms and reducing pain on the long term

(Bernaards et al., 2007). Question 5-6 concern neck-related exercise. This was consistent with the study of McLean et al **(**2007**)** demonstrated that the regular exercise predicted a good outcome for non-specific neck pain **(**McLean et al**.**, 2007**).**

In addition, it was interesting that the NHLOW score of participants, most of whom started to experience neck pain in the first months of the study, slightly increased when baseline was compared to 6- month and 12-month follow-up. This increase may indicate that the office worker with non-specific neck pain may change behavior to manage neck pain. Hence, this may lead to an increase in the NHLOW score from baseline. Wagner et al (2007) described that the decisions and actions that people make about their lifestyle behavior are effected by their level of health literacy (von Wagner et al., 2007). The office workers with improving health literacy are more likely to improve their health behaviors, health outcomes, and self-management skill. It may be explained that pain made participants more aware of their health and that this may lead them to learn for dealing the problem and changing behavior in order to relieve pain. It should, however, be noted that these interpretations are only speculative and that future research should shed light on this way of reasoning.

Strengths and limitations

The most important strength of this study is its prospective design; we followed pain intensity and disability every month over a 12-month period with high rates of follow-up. A further strength is that the study is building on earlier evidence reporting the

predictive value of the NHLOW in office workers without neck pain. A limitation of the study, however, is that the occurrence and recovery of neck pain was subjective in terms of pain intensity, which may have led to inaccuracy. Another drawback of self-reported data is the risk of overestimation of exposure. Furthermore, some workers may be more sensitive to any somatic disturbance than others. As a result, there is a risk of underreporting or overreporting of the symptom. Future studies should consider inclusion of objective information from physical examination. Another limitation is that duration of time recovery was measured from the onset of neck pain to the recovery, or completed 12-month follow-up. Hence, participants had unequal durations for follow-up.

Conclusion

This study showed that the median recovery duration of office workers suffering from neck pain was 2 months. There was no relation between age and duration of recovery from non-specific neck pain. This study also found that the NHLOW was unable to predict duration of recovery from non-specific neck pain in office workers.

Competing Interests

The authors declare that they have no competing interests.

Authors' Contributions

The authors have contributed in the following ways: KA provided concept/research design, data collection, data analysis and manuscript writing. AJvdB provided concept/research design, data analysis and manuscript writing. PJ provided concept/research design, data analysis and manuscript writing. All authors read and approved the final manuscript.

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CHAPTER 7
General conclusion

7.1 Summary of the results

In the first step, the author systematically reviewed randomized controll trials to gain insights into the effectiveness of education on the prevention and cure of non-specific neck and low back pain and to identify effective educational content to prevent and treat non-specific neck and low back pain (Chapter III). Thirty-six RCTs were included in this review, of which thirty RCTs were rated as high-quality studies. This review showed education programs were not effective in preventing and treating neck pain as well as treating low back pain. Conflicting evidence was found for the effectiveness of education on prevention of low back pain. Three education topics that may be effective in the prevention and treatment of neck and low back pain were identified, namely, function of the spine, information on activities, and information on coping with the problems. The knowledge from systematic reviewwas used to develop health literacy questionnaire (Chapter IV).

Health literacy consists of four domains (i.e. accessing, understanding, appraising, and applying). In the development of health literacy questionnaire, each question of four domains in the questionnaire were obtained from in-depth interview (CHAPTER III). Finally, the results showed that only the applying domain of health

literacy was associated with the development of non-specific neck pain in office workers. The health literacy questionnaire comprised six questions. Question 1-4 involves with behaviors of office workers during work, while Question 5-6 concerns neck-related exercise. The total score of this questionnaire ranges from 0 to 24. The test-retest reliability was good (ICC [3,1] = 0.75). Confirmatory factor analysis showed that the model fit indices were acceptable (RMSEA = 0.07, SRMR = 0.025, CFI = 0.98). Mann-Whitney U test showed that the total score of the developed questionnaire was significantly lower in office workers with neck pain than those without neck pain ($p<0.05$), indicating acceptable discriminative validity. The questionnaire was called "Neck pain-specific Heath Literacy for Office Workers (NHLOW)". Higher scores indicate higher health literacy and lower risk to develop non-specific neck pain (Chapter IV). In addition, the predictive validity of the NHLOW questionnaire was evaluated (Chapter V). The results demonstrated that the NHLOW questionnaire had acceptable ability to predict incident non-specific neck pain in office workers. A cut-off score of the NHLOW questionnaire was less than or equal to 8 points had a sensitivity of 57.3% and a specificity of 96.6%. The positive and negative predictive value were 88.1% and 83.6%, respectively. The area under the receiver-operating characteristic curve was 0.769 (95% CI 0.706 to 0.832). Based on the results, the NHLOW questionnaire showed acceptable predictive validity. Its area under the receiver operating characteristics curve indicated acceptable ability to discriminate office workers with and without future non-specific neck pain.

The NHLOW questionnaire is a potentially useful tool for helping clinicians to identify office workers at risk of developing non-specific neck pain. Identification of persons at risk would also mean the enhancement of resource allocation to those most in need and most likely to benefit from preventive intervention. The questionnaire is suitable for utilization in primary health care and workplace settings, where full clinical examinations are impractical due to limited personnel and time. It is easy to administer and can be carried out within a short space of time (approximately 5 min) because it requires a respondent to answer only six questions.

In addition, recovery from onset non-specific neck pain, determined by pain intensity and disability, took a median time of 2 months. The median time to recovery from neck pain in the high-score group was 2 months, and in the low-score group was 3 months. However, when comparing the low-score group and the high-score group, there was no significant difference in time to recovery from non-specific neck pain. Thus, the NHLOW questionnaire was unable to predict duration of recovery from non-specific neck pain in office workers.

7.2 Limitations of the study and suggestions for further study

In the first study (systematic review), there are three main methodological limitations of this systematic review. First, the search strategy was limited only to full published reports in English. The possibility of language bias may have affected the results of the review. Second, only one reviewer searched for studies. The possibility of selection bias cannot be ruled out and not all studies were identified, affecting the results of this review. Third, the researcher summarized the results from studies with low to considerable heterogeneity. This may explain the observed variation in the results among studies. Future research is required to indicate whether differences in these aspects affect the effectiveness of education on the prevention and treatment of neck and low back pain.

In the second study, i.e. a study of development health literacy questionnaire, there are at least two methodological limitations that are noteworthy. First, the use of a convenience sample restricts the external validity of this study. Thus, generalization of the results from this study to other working populations should be made with caution. Second, the cross-sectional design of this study did not accommodate an evaluation of the predictive validity of the NHLOW. A further limitation relates to the total score calculated from the five factors. In short, the unequal items of each factor mean that greater weight is given to Factor 5, which consists of two questions. One should remain aware of this when generating interpretations based upon the total score calculation. An alternative would be to use the average of the two questions in

the total score. Finally, it has been argued that different factors might not be added into a total score. However, all five factors originated from one domain, which summarizes the impact of the ability to use the information to maintain and improve health (applying domain). Moreover, many other, well-known questionnaires also calculate total scores from different factors (Ruokolainen et al., 2016). Further prospective study is required to assess the predictive validity of the NHLOW.

In the third study, i.e. evaluation the predictive validity of the NHLOW questionnaire on non-specific neck pain in office workers, there are at least three limitations that are noteworthy. First, the use of a convenience sample restricts the external validity of this study. Thus, generalization of the results from this study to other working populations should be made with caution. Second, the diagnosis of neck pain was subjective, which may have led to inaccuracy. Another important drawback of self-reported data is the risk of overestimation of exposure (van den Heuvel et al., 2005). Furthermore, some workers may be more sensitive to any somatic disturbance than others. As a result, there is a risk of underreporting or overreporting of the incidence. Future studies should consider inclusion of objective information from physical examination. Third, the cut-off score may be very specific to the population study. Thus, extrapolation of these results to other populations should be made with caution.

In the forth study, i.e. a study of recovery from non-specific neck pain in office workers, there are a limitation of the study. The occurrence and recovery of neck pain was subjective in terms of pain intensity, which may have led to inaccuracy. Another drawback of self-reported data is the risk of overestimation of exposure. Furthermore, some workers may be more sensitive to any somatic disturbance than others. As a result, there is a risk of underreporting or overreporting of the symptom. Future studies should consider inclusion of objective information from physical examination. Another limitation is that duration of time recovery was measured from the onset of neck pain to the recovery, or completed 12-month follow-up. Hence, participants had unequal durations for follow-up.

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APPENDIX

APPENDIX A

THE NECK PAIN-SPECIFIC HEATH LITERACY FOR OFFICE WORKERS (NHLOW)

แบบสอบถามความแตกฉานด้านสุขภาพเพื่อทำนายโรคปวดคอแบบไม่เจาะจง

ในคนทำงานในสำนักงาน

ID.....

คำชี้แจง

- กรุณาตอบคำถามทุกข้อตามความเป็นจริง และเลือกคำตอบที่สอดคล้องกับความคิดเห็นของคุณมากที่สุด เพียง 1คำตอบเท่านั้น โดยใส่เครื่องหมาย ✓ ในตาราง

ขอขอบพระคุณเป็นอย่างสูงในการให้ความร่วมมือ

แบบสอบถามความแตกฉานด้านสุขภาพเพื่อทำนายโรคปวดคอแบบไม่เจาะจง

ในคนทำงานในสำนักงาน

The Neck pain-specific Heath Literacy for Office Workers (NHLOW)

คำถาม	ความถี่ในการปฏิบัติ				
	ไม่เคย	นานๆครั้ง	บางครั้ง	บ่อยครั้ง	ทุกครั้ง
1. คุณปรับท่าทางการนั่งให้อยู่ในลักษณะดังภาพนี้บ้างหรือไม่ 					
2. คุณมีการพักระหว่างทำงาน (ที่ไม่ใช่การพักเที่ยง) บ้างหรือไม่ในระหว่างนั่งทำงาน					
3. คุณนั่งทำงานต่อเนื่องเป็นระยะเวลานาน แม้จะมีอาการปวดคอ					
4. โดยปกติ หากคุณมีอาการปวดคอระหว่างทำงาน คุณจะบรรเทาอาการด้วยการก้ม-เงยศีรษะ หรือเอียงคอไปทางด้านซ้าย-ขวา					
5. โดยปกติคุณยืดกล้ามเนื้อบริเวณคอและบ่า บ้างหรือไม่					
6. โดยปกติคุณบริหารคอเพื่อเพิ่มความแข็งแรงและความทนทานของกล้ามเนื้อบริเวณคอและบ่าบ้างหรือไม่					

APPENDIX B

DIARY

สมุดบันทึก

ชื่อ-นามสกุล.....

วันที่รับสมุดบันทึก ...../...../.....

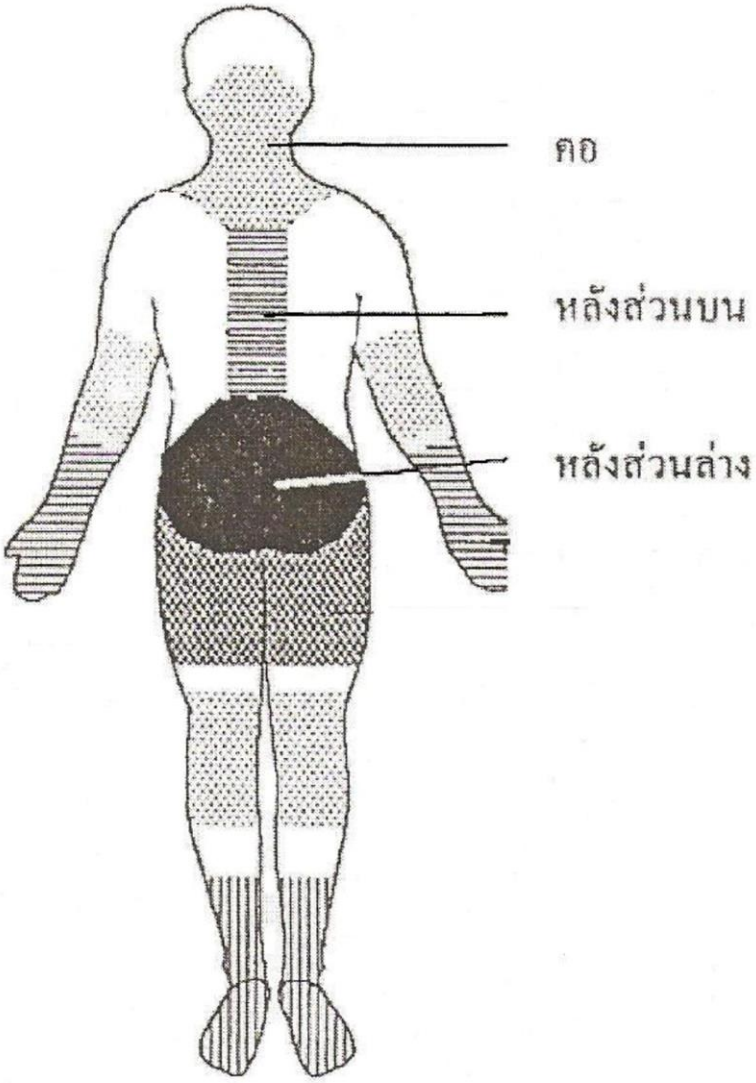
วันนัดส่งสมุดบันทึก ...../...../.....

คำชี้แจง

สมุดบันทึกประจำวันเล่มนี้ ใช้บันทึกข้อมูลสุขภาพ เกี่ยวกับอาการปวดบริเวณคอ บ่า

ในช่วงเวลา 1 เดือน

ขอบคุณทุกท่านที่ให้ความร่วมมือในการลงบันทึกตามที่กำหนดค่ะ



รูปแสดงขอบเขตของ คอ/บ่า หลังส่วนบน และหลังส่วนล่าง

บันทึกข้อมูลอาการปวดบริเวณคอ บ่า ในช่วง 1 เดือน

ตอนที่ 1 ข้อมูลอาการปวดคอ/บ่า

ก) กรุณาตอบแบบสอบถามให้ครบทุกข้อ อ่านและตอบคำถามแต่ละข้อให้ถูกต้อง ตามความเป็นจริง โดยขีดเครื่องหมาย ✓ ลงในช่อง [....] ที่ท่านเห็นว่าตรงกับลักษณะของท่านมากที่สุด

1. ในรอบ 1 เดือนที่ผ่านมาท่านเคยมีอาการปวด ความรู้สึกไม่สบาย หรือความรู้สึกที่ไม่ปกติ (เช่น ผิวหนังชา หรือแขน/ขาอ่อนแรง เป็นต้น) เป็นเวลานานอย่างน้อย 1 วัน ณ บริเวณคอ/บ่า

   [....] 1. ใช่ [....] 2. ไม่ใช่ (สิ้นสุดการตอบแบบสอบถาม)

2. อาการปวดคอ/บ่า ในรอบ 1 เดือนที่ผ่านมา ครั้งที่รุนแรงที่สุดมีระดับความรุนแรงเท่ากับเท่าไหร่ ขอให้ทำเครื่องหมาย | ลงบนเส้นตรงด้านล่างที่คิดว่ามีระดับความปวดตรงกับตัวท่าน โดยด้านซ้ายมือ คือ ไม่ปวด จนไปถึงด้านขวามือ คือ ปวดมากที่สุด

ไม่ปวด ปวดมากที่สุด

ตอนที่ 2 ความบกพร่องความสามารถของคอ (Neck Disability Index)

แบบสอบถามนี้ใช้ในการประเมินผลกระทบของ**อาการปวดคอ**ที่มีต่อความสามารถในการจัดการชีวิตประจำวันของท่าน โปรดเลือกข้อที่ตรงกับอาการและความสามารถของท่าน**มากที่สุด**เพียงข้อเดียว และกรุณาให้ข้อมูลในทุกข้อ

ข้อที่ 1 ความรุนแรงของอาการปวด

- ☐ ในขณะนี้ไม่มีอาการปวด
- ☐ ในขณะนี้มีอาการปวดเพียงเล็กน้อย
- ☐ ในขณะนี้มีอาการปวดปานกลาง
- ☐ ในขณะนี้มีอาการปวดค่อนข้างมาก
- ☐ ในขณะนี้มีอาการปวดมาก
- ☐ ในขณะนี้มีอาการปวดมากที่สุดเท่าที่จะจินตนาการได้

ข้อที่ 2 การดูแลตนเอง (เช่น อาบน้ำ/ชำระล้างร่างกาย แต่งตัว เป็นต้น)

- ☐ สามารถทำเองได้ตามปกติ โดยไม่ทำให้อาการปวดเพิ่มขึ้น
- ☐ สามารถทำเองได้ตามปกติ แต่มีอาการปวดเพิ่มขึ้น
- ☐ การทำเองทำให้มีอาการปวด จึงทำให้ต้องทำอย่างช้า ๆ และระมัดระวัง
- ☐ ทำเองได้เป็นส่วนใหญ่ แต่จะต้องการความช่วยเหลืออยู่บ้าง
- ☐ ต้องการการช่วยเหลือในการดูแลตนเองเกือบทั้งหมด ทุกวัน
- ☐ ไม่สามารถแต่งตัวได้เอง อาบน้ำ/ชำระล้างร่างกายเองได้ด้วยความยากลำบาก และต้องอยู่บนเตียง

ข้อที่ 3 การยกของ

- ☐ สามารถยกของหนักได้ โดยไม่มีอาการปวดเพิ่มขึ้น
- ☐ สามารถยกของหนักได้ แต่มีอาการปวดเพิ่มขึ้น
- ☐ อาการปวดทำให้ไม่สามารถยกของหนักขึ้น จากพื้น ได้ แต่สามารถยกได้หากของนั้น อยู่ในที่ที่ เหมาะสม เช่น บนโต๊ะ
- ☐ อาการปวดทำให้ไม่สามารถยกของหนักขึ้น จากพื้น ได้ แต่สามารถยกได้หากของนั้น มีน้ำหนักเบาถึงปานกลาง และจัดวางอยู่ในที่ที่เหมาะสม
- ☐ สามารถยกของที่มีน้ำหนักเบามากๆ ได้
- ☐ ไม่สามารถยก/ถือ/หิ้ว/แบก/อุ้ม หรือสะพายสิ่งของใด ๆ ได้เลย

ข้อที่ 4 การอ่าน

- ☐ สามารถอ่านได้มากตามที่ต้องการ โดยไม่มีอาการปวดคอ
- ☐ สามารถอ่านได้มากตามที่ต้องการ โดยมีอาการปวดคอเพียงเล็กน้อย
- ☐ สามารถอ่านได้มากตามที่ต้องการ โดยมีอาการปวดคอปานกลาง
- ☐ ไม่สามารถอ่านได้มากตามที่ต้องการ เพราะมีอาการปวดคอปานกลาง
- ☐ แทบจะไม่สามารถอ่านได้เลยเพราะมีอาการปวดคอมาก
- ☐ ไม่สามารถอ่านได้เลย

ข้อที่ 5 อาการปวดศีรษะ

- ☐ ไม่มีอาการปวดศีรษะเลย
- ☐ มีอาการปวดศีรษะเพียงเล็กน้อย และนาน ๆ ครั้ง
- ☐ มีอาการปวดศีรษะปานกลาง และนาน ๆ ครั้ง
- ☐ มีอาการปวดศีรษะปานกลาง และบ่อยครั้ง
- ☐ มีอาการปวดศีรษะมาก และบ่อยครั้ง
- ☐ มีอาการปวดศีรษะเกือบตลอดเวลา

ข้อที่ 6 การตั้งสมาธิ

- ☐ สามารถตั้งสมาธิได้อย่างที่ต้องการ โดยไม่มีความยากลำบาก
- ☐ สามารถตั้งสมาธิได้อย่างที่ต้องการ โดยมีความยากลำบากเพียงเล็กน้อย
- ☐ มีความยากลำบากปานกลางในการตั้งสมาธิเมื่อต้องการ
- ☐ มีความยากลำบากอย่างมากในการตั้งสมาธิเมื่อต้องการ
- ☐ มีความยากลำบากมากที่สุดในการตั้งสมาธิเมื่อต้องการ
- ☐ ไม่สามารถตั้งสมาธิได้เลย

ข้อที่ 7 การทำงาน

- ☐ สามารถทำงานได้มากตามที่ต้องการ
- ☐ สามารถทำงานประจำได้เท่านั้น ไม่มากไปกว่านั้น
- ☐ สามารถทำงานประจำได้เกือบทั้งหมด แต่ไม่มากไปกว่านั้น
- ☐ ไม่สามารถทำงานประจำได้เลย
- ☐ แทบจะทำงานอะไรไม่ได้เลย
- ☐ ไม่สามารถทำงานอะไรได้เลย

ข้อที่ 8 การขับขี่รถ

☐ สามารถทำได้โดยไม่มีอาการปวดคอ

☐ สามารถทำได้นานตามที่ต้องการ โดยมีอาการปวดคอเพียงเล็กน้อย

☐ สามารถทำได้นานตามที่ต้องการ โดยมีอาการปวดคอปานกลาง

☐ ไม่สามารถทำได้นานตามที่ต้องการ เพราะมีอาการปวดคอปานกลาง

☐ แทบจะทำไม่ได้เลย เพราะมีอาการปวดคอมาก

☐ ไม่สามารถทำได้เลย

ข้อที่ 9 การนอนหลับ

☐ ไม่มีความยากลำบากในการนอนหลับ

☐ การนอนหลับถูกรบกวนเพียงเล็กน้อย (นอนไม่หลับน้อยกว่า 1 ชั่วโมง)

☐ การนอนหลับถูกรบกวนเล็กน้อย (นอนไม่หลับ 1-2 ชั่วโมง)

☐ การนอนหลับถูกรบกวนปานกลาง (นอนไม่หลับ 2-3 ชั่วโมง)

☐ การนอนหลับถูกรบกวนเป็นอย่างมาก (นอนไม่หลับ 3-5 ชั่วโมง)

☐ การนอนหลับถูกรบกวนอย่างสิ้นเชิง (นอนไม่หลับ 5-7 ชั่วโมง)

ข้อที่ 10 กิจกรรมนันทนาการ/การพักผ่อนหย่อนใจ

☐ สามารถทำกิจกรรมทุกอย่างได้ โดยไม่มีอาการปวดคอเลย

☐ สามารถทำกิจกรรมทุกอย่างได้ แต่มีอาการปวดคออยู่บ้าง

☐ สามารถทำกิจกรรมได้เป็นส่วนใหญ่ แต่ไม่ทั้งหมด เพราะมีอาการปวดคอ

☐ สามารถทำกิจกรรมได้เพียงบางอย่าง เพราะมีอาการปวดคอ

☐ แทบจะทำกิจกรรมต่าง ๆ ไม่ได้เลย เพราะมีอาการปวดคอ

☐ ไม่สามารถทำกิจกรรมใด ๆ ได้เลย

ขอขอบพระคุณเป็นอย่างสูงในการให้ความร่วมมือ

APPENDIX C
QUESTIONNAIRE

แบบสอบถามคัดกรอง

เลขที่แบบสอบถาม.....

วัน เดือน ปี ที่เก็บข้อมูล.....

☐ กรุณาตอบคำถามทุกข้อตามความเป็นจริง โดยเลือกเพียงคำตอบเดียว หรือใส่ข้อความสั้นๆที่ตรงกับตัวท่านมากที่สุด

☐ ในบางคำถามสามารถเลือกตอบได้มากกว่า 1 คำตอบ ซึ่งจะระบุไว้ในท้ายของคำถามข้อนั้น

ขอขอบคุณเป็นอย่างสูงในการให้ความร่วมมือ

แบบคัดกรอง ID…….

คำชี้แจง กรุณาทำเครื่องหมาย ✓ ลงใน [....] หน้าคำตอบที่ท่านเลือก และตอบคำถามทุกข้อตามความเป็นจริง

1. ท่านใช้เวลาส่วนใหญ่ทำงานอยู่ในสำนักงานและงานที่ทำเกี่ยวข้องกับการใช้เครื่องคอมพิวเตอร์ การเข้าร่วมประชุม การอ่านเอกสาร และการคุยโทรศัพท์และมีการเดินหรือยืนหรือยกของ บ้างเล็กน้อยใช่หรือไม่

   [....] ใช่ [....] ไม่ใช่

2. ท่านเป็นพนักงานแบบใด

   [....] แบบเต็มเวลา (Full time) [....] แบบชั่วคราว (Part time)

3. ท่านทำงานในสำนักงาน มาอย่างต่อเนื่องนานเท่าใด

   [....] น้อยกว่า 5 ปี [....] เท่ากับ 5 ปี หรือมากกว่า

4. ท่านเคยเข้ารับการผ่าตัดบริเวณแนวกระดูกสันหลัง ใช่หรือไม่

   [....] ใช่ [....] ไม่ใช่

5. ท่านเคยได้รับอุบัติเหตุรุนแรงบริเวณกระดูกสันหลัง ใช่หรือไม่

   [....] ใช่ [....] ไม่ใช่

6. ท่านเคยได้รับการวินิจฉัยจากแพทย์ ว่าเป็นโรคใดต่อไปนี้บ้างหรือไม่ **(เลือกได้มากกว่า 1 ข้อ)**

   [....] ภาวะความผิดปกติของกระดูกสันหลังแต่กำเนิด [....] โรคข้ออักเสบรูมาตอยด์

   [....] โรคติดเชื้อของกระดูกสันหลัง [....] โรคเกาต์

   [....] โรคกระดูกสันหลังอักเสบ ชนิดยึดติด (Ankylosing Spondylitis)

[....] โรคกระดูกสันหลังเคลื่อน [....] โรคกระดูกพรุน

[....] โรคกระดูกสันหลังเสื่อม [....] ภาวะเนื้องอกหรือมะเร็ง

[....] โรคในกลุ่มแพ้ภูมิตนเอง (Systemic Lupus Erythematosus)

[....] โรคอื่นๆ ที่เกี่ยวข้องกับกระดูกสันหลัง (โปรดระบุ).....

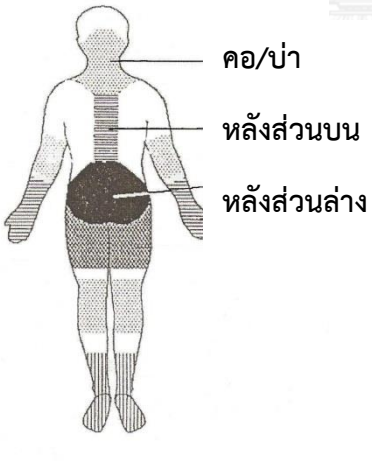
[....] ไม่มี

7. ท่านกำลังตั้งครรภ์ หรือมีแผนจะตั้งครรภ์ในช่วง 12 เดือนข้างหน้า หรือไม่

[....] ใช่ [....] ไม่ใช่

8. ท่านมีแผนจะหยุดงานในช่วง 12 เดือนข้างหน้า หรือไม่

[....] มีแผน [....] ไม่มีแผน



รูปแสดงอาณาเขตส่วนของ คอ/บ่า หลังส่วนบน และหลังส่วนล่าง

9. ในช่วง <u>6 เดือนที่ผ่านมา</u> ท่านเคยมีอาการปวด บริเวณ **<u>คอ/บ่า</u>** <u>ติดต่อกันนานกว่า 1 วัน</u> หรือไม่

[....] เคย [....] ไม่เคย (จบการตอบแบบสอบถาม)

10. อาการปวด**<u>คอ/บ่า</u>** <u>ในรอบ 6 เดือนที่ผ่านมา</u> โดยเฉลี่ยมีระดับความรุนแรงเท่ากับเท่าใด ขอให้ทำเครื่องหมาย | ลงบนเส้นตรงด้านล่าง ที่คิดว่ามีระดับความปวดตรงกับตัวท่าน โดยด้านซ้ายมือ คือ ไม่ปวด จนไปถึงด้านขวามือ คือ ปวดมากที่สุด

ไม่ปวด ปวดมากที่สุด

ขอขอบพระคุณเป็นอย่างสูงในความร่วมมือ

แบบสอบถาม

เลขที่แบบสอบถาม.....

วัน เดือน ปี ที่เก็บข้อมูล.....

คำชี้แจง

☐ แบบสอบถามนี้แบ่งออกเป็น 3 ส่วน ได้แก่

ส่วนที่ 1 ข้อมูลส่วนบุคคล

ส่วนที่ 2 ข้อมูลเกี่ยวกับลักษณะงานประจำของคุณ

ส่วนที่ 3 ข้อมูลด้านจิตใจและสังคมสิ่งแวดล้อม

☐ กรุณาตอบคำถามทุกข้อตามความเป็นจริง โดยเลือกเพียงคำตอบเดียว หรือใส่ข้อความสั้นๆ ที่ตรงกับตัวคุณมากที่สุด

☐ ในบางคำถามสามารถเลือกตอบได้มากกว่า 1 คำตอบ ซึ่งจะระบุไว้ในท้ายของคำถามข้อนั้น

ขอขอบพระคุณเป็นอย่างสูงในการให้ความร่วมมือ

<u>ส่วนที่ 1</u> ข้อมูลส่วนบุคคล

คำชี้แจง กรุณาตอบคำถามทุกข้อตามความเป็นจริง โดยใส่ข้อความสั้นๆ หรือเลือกคำตอบที่สอดคล้องกับความคิดเห็นของคุณมากที่สุด โดยใส่เครื่องหมาย ✓ ใน [....] เพียง 1 คำตอบ

---

1. เพศ [....] 1. ชาย [....] 2. หญิง

2. วัน/เดือน/ปีเกิด...../...../.....

3. สถานภาพสมรส

[....] 1. โสด [....] 2. สมรส

[....] 3. หม้าย/หย่า/แยกทาง [....] 4. อื่นๆ โปรดระบุ.....

4. ท่านมีโรคประจำตัวหรือไม่

[....] 1. ไม่มี

[....] 2. มี โปรดระบุ.....

5. วุฒิการศึกษาสูงสุด

[....] 1. ม.3 [....] 2. ม.6

[....] 3. ปวช./ปวท./ปวส. [....] 4. ปริญญาตรี

[....] 5. ปริญญาโท-เอก [....] 6. อื่นๆ โปรดระบุ.....

6. คุณสูบบุหรี่ หรือไม่

[....] 1. ไม่สูบ

[....] 2. ไม่สูบ แต่บุคคลใกล้ชิดสูบ เช่น สมาชิกในครอบครัว หรือ เพื่อนร่วมงาน เป็นต้น

[....] 3. สูบ โปรดระบุจำนวนบุหรี่ที่สูบโดยประมาณ.....มวนต่อวัน

[....] 4. เคยสูบ แต่ปัจจุบันไม่ได้สูบแล้ว โปรดระบุจำนวนปีที่หยุดสูบบุหรี่ .....ปี

7. ในรอบ 12 เดือนที่ผ่านมา คุณออกกำลังกายบ่อยแค่ไหน (การออกกำลังกาย หมายถึง การเคลื่อนไหว ร่างกายอย่างต่อเนื่องอย่างน้อย 30 นาที หรือจนรู้สึกเหนื่อย เพื่อเสริมสร้างสุขภาพร่างกายให้แข็งแรง โดยกระทำในยามว่างหรือเป็นงานอดิเรก เช่น เดินเร็ว วิ่ง ว่ายน้ำ เล่นกีฬา เป็นต้น)

[....] 1. ไม่ได้ทำ

[....] 2. ทำบ้าง แต่ไม่สม่ำเสมอ

[....] 3. ทำสม่ำเสมอ โดยเฉลี่ย.....ครั้งต่อสัปดาห์

[....] 4. ไม่แน่ใจ

8. ในอดีต (มากกว่า 6 เดือนที่ผ่านมา) คุณเคยมีอาการปวดคอหรือไม่

[....] 1.เคย [....] 2. ไม่เคย

9. ในอดีต (มากกว่า 6 เดือนที่ผ่านมา) คุณเคยมีอาการปวดหลังหรือไม่

[....] 1.เคย [....] 2. ไม่เคย

<u>ส่วนที่ 2</u> ข้อมูลเกี่ยวกับลักษณะงานประจำของคุณ

คำชี้แจง กรุณาตอบคำถามทุกข้อตามความเป็นจริง โดยใส่ข้อความสั้นๆ หรือเลือกคำตอบที่สอดคล้องกับความคิดเห็นของคุณมากที่สุดเพียงคำตอบเดียว โดยใส่เครื่องหมาย ✓ ใน [....] หรือช่องในตารางที่ตรงกับคำตอบของคุณ

---

1. ตำแหน่งงานปัจจุบันของคุณคือ.....

   [....] 1. ผู้บริหาร/ผู้จัดการ/หัวหน้างาน

   [....] 2. เจ้าหน้าที่การเงิน/บัญชี

   [....] 3. เจ้าหน้าที่ธุรการ/สำนักงาน

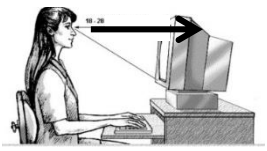
   [....] 4. อื่นๆ โปรดระบุ.....

2. ตั้งแต่อดีตจนถึงปัจจุบัน คุณเคยทำงานในสำนักงานมาแล้วเป็นเวลา.....ปี
3. <u>ในรอบ 12 เดือนที่ผ่านมา</u> คุณทำงานในตำแหน่งดังกล่าว เฉลี่ยวันละ.....ชั่วโมง
4. <u>ในรอบ 12 เดือนที่ผ่านมา</u> คุณทำงานล่วงเวลา เฉลี่ยวันละ.....ชั่วโมง
5. ลักษณะการพิมพ์งานของคุณ

   [....] 1. พิมพ์แบบสัมผัส (ขณะพิมพ์งาน ตามองจอมอนิเตอร์โดยไม่ต้องมองแป้นพิมพ์)

   [....] 2. พิมพ์แบบไม่สัมผัส

6. **เมื่อคุณใช้งานเครื่องคอมพิวเตอร์ตำแหน่งของขอบบนของจอคอมพิวเตอร์อยู่ในระดับสายตาหรือไม่ (ดังรูป)**



[....] 1. อยู่ระดับสายตา [....] 2. ต่ำกว่าระดับสายตา

[....] 3. สูงกว่าระดับสายตา [....] 4. ไม่แน่ใจ

7. เมื่อคุณใช้งานเครื่องคอมพิวเตอร์ แขนและมือของท่านมีที่รองรับหรือไม่

[....] 1. ใช่ [....] 2. ไม่ใช่

8. เมื่อคุณใช้งานเครื่องคอมพิวเตอร์ บ่อยครั้งแค่ไหน ที่คุณในท่าทางดังภาพ

[....] 1. บ่อยครั้ง

[....] 2. บางครั้ง

[....] 3. นานๆ ครั้ง

9. คุณเห็นว่า ที่ทำงานของคุณ โดยส่วนใหญ่มีลักษณะตรงกับข้อใดบ้าง

หัวข้อ¤	ใช่¤	ไม่ใช่¤
¶ ¤  ข้อที่·9.1¶	¤	¤
9.1·เก้าอี้ที่คุณนั่งเป็นประจำ·คุณสามารถปรับระดับความสูงได้··(ดังรูป)¤	¤	¤
9.2·โต๊ะทำงานที่คุณใช้เป็นประจำ·มีความสูงพอเหมาะกับคุณ¤	¤	¤
9.3·ห้องทำงานของคุณ·มักจะมีเสียงดังรบกวน¤	¤	¤
9.4·ห้องทำงานของคุณ·มักจะมีอุณหภูมิพอเหมาะ·ไม่ร้อนหรือเย็นจนเกินไป¤	¤	¤
9.5·ห้องทำงานของคุณ·มักจะมีแสงสว่างเพียงพอ·ไม่มืดหรือสว่างจนเกินไป¤	¤	¤
9.6·ห้องทำงานมีอากาศถ่ายเทดี¤	¤	¤

10. ตำแหน่งที่ว่างของแป้นพิมพ์ที่ท่านใช้ อยู่ห่างจากขอบโต๊ะมากกว่า 15 ซม. ใช่หรือไม่ (โปรดดูตัวอย่างที่แสดงไว้)

[....] 1. ใช่ [....] 2. ไม่ใช่

11. โดยปกติ ในระหว่างวันทำงาน ท่านมีความรู้สึกตึงบริเวณคอและบ่า บ่อยแค่ไหน

[....] 1. บ่อยครั้ง

[....] 2. บางครั้ง

[....] 3. นานๆ ครั้ง

<u>ส่วนที่ 3</u> ข้อมูลด้านจิตใจและสังคมสิ่งแวดล้อม

คำชี้แจง กรุณาอ่านประโยคต่อไปนี้ แล้วขีดเรื่องหมาย ✓ ในช่องที่ตรงกับความรู้สึกของคุณต่องาน ในกรณีที่ไม่มีคำตอบใดตรง กรุณาเลือกข้อที่ใกล้เคียงความรู้สึกที่สุดเพียงข้อเดียว **<u>กรุณาตอบทุกข้อ</u>**

	1. ไม่เห็นด้วยมาก	2. ไม่เห็นด้วย	3. เห็นด้วย	4. เห็นด้วยมาก	สำหรับนักวิจัย
1. ในการทำงานคุณได้พัฒนาความสามารถของตนเอง	☐	☐	☐	☐	
2. คุณแสดงความเห็นได้เต็มที่ในเรื่องที่เกิดขึ้นในงานของคุณ	☐	☐	☐	☐	
3. งานของคุณทำให้คุณต้องค้นคิดสิ่งใหม่ๆหรือคิดสร้างสรรค์	☐	☐	☐	☐	
4. คุณมีบทบาทสำคัญในการตัดสินใจในกลุ่มงานของคุณ	☐	☐	☐	☐	
5. ในการทำงานคุณมีโอกาสตัดสินใจด้วยตัวเอง	☐	☐	☐	☐	
6. งานที่คุณทำต้องการทักษะและความชำนาญระดับสูง	☐	☐	☐	☐	
7. ในการทำงานคุณต้องเรียนรู้สิ่งใหม่ๆ	☐	☐	☐	☐	
8. ที่ทำงานของคุณใช้การตัดสินแบบประชาธิปไตย	☐	☐	☐	☐	

9. งานของคุณต้องใช้สมาธิมากและนาน	☐	☐	☐	☐	
10. โอกาสก้าวหน้าในอาชีพหรืองานของคุณดี	☐	☐	☐	☐	
11. ในเวลา 5 ปีข้างหน้า ทักษะความชำนาญของคุณยังมีคุณค่า	☐	☐	☐	☐	
12. คุณต้องทำสิ่งซ้ำๆหลายๆครั้งในงาน	☐	☐	☐	☐	
13. คุณต้องทำงานที่มีลักษณะหลากหลายมาก	☐	☐	☐	☐	
14. คุณมีอิสระในการตัดสินใจว่าจะทำงานยังไง	☐	☐	☐	☐	
15. งานของคุณยุ่งวุ่นวาย	☐	☐	☐	☐	
16. งานของคุณเป็นงานหนัก	☐	☐	☐	☐	
17. คุณต้องทำงานมากจนเวลาพักผ่อนไม่พอ	☐	☐	☐	☐	
18. คุณมักต้องรีบทำงานให้ทันกำหนด	☐	☐	☐	☐	
19. งานของคุณมักถูกขัดจังหวะก่อนเสร็จ ทำให้ต้องทำต่อทีหลัง	☐	☐	☐	☐	
20. งานของคุณเป็นงานที่ต้องทำอย่างรวดเร็ว	☐	☐	☐	☐	
21. เงินตอบแทนหรือค่าจ้างของคุณน้อย	☐	☐	☐	☐	
22. งานของคุณต้องล่าช้าเพราะต้องคอยงานจากผู้อื่น/หน่วยอื่น	☐	☐	☐	☐	
23. คุณต้องเคลื่อนไหวร่างกายอย่างรวดเร็วและต่อเนื่องในงาน	☐	☐	☐	☐	
	1. ไม่เห็นด้วยมาก	2. ไม่เห็นด้วย	3. เห็นด้วย	4. เห็นด้วยมาก	สำหรับนักวิจัย
24. ในงานคุณต้องพบปัญหาหรือข้อขัดแย้งที่เกิดจากผู้อื่น	☐	☐	☐	☐	
25. งานของคุณมีความเสี่ยงทางการเงิน เช่น ขาดทุน หมุนเงินไม่ทัน	☐	☐	☐	☐	
26. คุณจำเป็นต้องยกหรือเคลื่อนย้ายของหนักบ่อยๆในงาน	☐	☐	☐	☐	
27. คุณมักต้องทำงานนานๆ โดยหัวและแขนอยู่ในท่าไม่เหมาะสม	☐	☐	☐	☐	
28. งานของคุณเป็นงานที่ใช้แรงกายมาก	☐	☐	☐	☐	
29. คุณต้องทำงานนานๆ โดยร่างกายอยู่ในท่าไม่เหมาะสม	☐	☐	☐	☐	
30. งานที่คุณทำต้องแข่งขันกับผู้อื่น	☐	☐	☐	☐	
31. งานคุณทำมั่นคงดี	☐	☐	☐	☐	

32. งานที่คุณทำมีสม่ำเสมอตลอดปีใช่หรือไม่ (เลือกข้อใดข้อหนึ่ง)

☐ 1. ไม่ใช่ มีงานเป็นช่วง และเลิกจ้างงานบ่อยๆ ☐ 2. ไม่ใช่ เลิกจ้างงานบ่อยๆ

☐ 3. ไม่ใช่ มีงานเป็นช่วงๆ ☐ 4. มีงานทำสม่ำเสมอตลอดปี

33. ในปีที่ผ่านมา คุณเผชิญกับสถานการณ์ที่ทำให้เกือบตกงาน /ไม่มีงานทำ /เลิกจ้างบ่อยแค่ไหน

☐ 1. ปีที่แล้วฉันตกงาน/ถูกเลิกจ้าง ☐ 2. ตลอดเวลา ☐ 3. เคยบ้าง ☐ 4. ไม่มีเลย

34. ใน 2 ปีข้างหน้า คุณมีโอกาสจะสูญเสียงานของคุณฉะนี้กับนายจ้างคนนี้มากน้อยแค่ไหน

☐ 1. มีโอกาสสูงมาก ☐ 2. มีโอกาส บ้าง ☐ 3. ไม่ค่อยมีโอกาส ☐ 4. ไม่มีโอกาสเลย

<u>การอยู่ร่วมกันเป็นสังคม ทุกคนต้องมี**ผู้ร่วมงาน**แม้จะทำงานคนเดียว</u> **ผู้ร่วมงานหมายถึง** คนที่ทำงานร่วมกับคุณไม่ว่าจะเป็นสามี ญาติ เพื่อนที่ทำงานด้วย ตลอดจนผู้ที่ต้องติดต่อเกี่ยวข้องในงานเช่น ร้านค้าหรือบุคคลที่คุณไปติดต่อ

	1. ไม่เห็นด้วยมาก	2. ไม่เห็นด้วย	3. เห็นด้วย	4. เห็นด้วยมาก	สำหรับนักวิจัย
35. หัวหน้าคุณเอาใจใส่ทุกข์สุขของลูกน้อง	☐	☐	☐	☐	
36. หัวหน้าคุณเก่งในการทำให้คนทำงานร่วมกันได้	☐	☐	☐	☐	
37. หัวหน้าคุณช่วยเหลือให้งานสำเร็จลุล่วงไป	☐	☐	☐	☐	
38. หัวหน้าคุณให้ความสนใจกับสิ่งที่คุณพูด	☐	☐	☐	☐	
39. ผู้ร่วมงานของคุณช่วยเหลือกันเพื่อให้งานเสร็จ	☐	☐	☐	☐	
40. ผู้ร่วมงานของคุณเป็นมิตรดี	☐	☐	☐	☐	
41. ผู้ร่วมงานของคุณมีความสามารถในงานของเขาเอง	☐	☐	☐	☐	
42. ผู้ร่วมงานของคุณให้ความสนใจในตัวคุณ	☐	☐	☐	☐	

ในการทำงานคุณมีปัญหาต้องเจอกับสิ่งอันตรายใดๆ ต่อไปนี้หรือไม่

	1. ไม่มีปัญหา	2. มีบ้าง /เป็นปัญหาน้อย	3. มี /เป็นปัญหามาก	สำหรับนักวิจัย
43. เครื่องมือ เครื่องจักร หรืออุปกรณ์ที่อันตราย	☐	☐	☐	
44. กระบวนการทำงานที่อันตราย	☐	☐	☐	
45. การถูกทำอันตรายจากความร้อน ไฟลวกหรือถูกไฟฟ้าดูด	☐	☐	☐	
46. สารเคมีอันตรายหรือสารพิษใดๆ	☐	☐	☐	
47. การติดเชื้อโรคจากงาน	☐	☐	☐	
48. มลพิษทางอากาศจากฝุ่น ควัน ก๊าซ ฟูม เส้นใย หรือสิ่งอื่น	☐	☐	☐	
49. การจัดวางสิ่งของหรือจัดเก็บสต็อกที่อาจก่อให้เกิดอุบัติเหตุ	☐	☐	☐	
50. บริเวณงานสกปรก /รกรุงรัง /ไม่มีระเบียบ	☐	☐	☐	
51.การถูกทำร้ายทางจิตใจเช่น ถูกดุด่า ถูกลวนลามทางเพศฯ	☐	☐	☐	
52. สภาพจราจรคิดขัดเช่น รถติด คนขับไร้วินัย	☐	☐	☐	
53. การถูกทำร้ายทางกายเช่น เสี่ยงต่อการถูกปล้น จี้ ทุบตี ยิง	☐	☐	☐	
54. เสียงดัง	☐	☐	☐	

APPENDIX D

SEMI-STRUCTURE INTERVIEW GUIDELINE

1.ด้านการเข้าถึงข้อมูล

ผู้เข้าร่วมวิจัย / วัตถุประสงค์	แนวคำถาม			
	ผู้เชี่ยวชาญ	นักกายภาพบำบัด	พนักงานสำนักงาน ที่ไม่มีอาการปวดคอ	พนักงานสำนักงาน ที่มีอาการปวดคอ
1.เพื่อศึกษาข้อมูลเชิงลึกด้านการเข้าถึงข้อมูลการดูแลรักษาอาการปวดคอในพนักงานสำนักงาน				
1.1 แหล่งข้อมูล	1. ท่านคิดว่า เราควรเผยแพร่ข้อมูลเกี่ยวกับการดูแลรักษาอาการปวดคอให้กับพนักงานสำนักงานผ่านสื่อชนิดใด (สื่อชนิดใดที่พนักงานสำนักงานจะเข้าถึงข้อมูลง่ายที่สุด)	1. ท่านคิดว่าเราควรเผยแพร่ข้อมูลเกี่ยวกับการดูแลรักษาอาการปวดคอให้กับพนักงานสำนักงานผ่านสื่อชนิดใด (สื่อชนิดใดที่พนักงานสำนักงานจะเข้าถึงข้อมูลง่ายที่สุด)	1.ท่านสามารถหาข้อมูลเกี่ยวกับการดูแลรักษาอาการปวดคอได้อย่างไร(แหล่งของข้อมูลบุคคลที่ให้คำปรึกษา) 2. สื่อชนิดใดที่สามารถเข้าถึงง่ายเพื่อให้ได้ข้อมูลในการดูแลรักษาอาการปวดคอ	1.ท่านสามารถหาข้อมูลเกี่ยวกับการดูแลรักษาอาการปวดคอได้อย่างไร (แหล่งของข้อมูลบุคคลที่ให้คำปรึกษา) 2. สื่อชนิดใดที่สามารถเข้าถึงง่ายเพื่อให้ได้ข้อมูลในการดูแลรักษาอาการปวดคอ

1.2 ปัจจัยส่งเสริมและขัดขวางการ เข้าถึงข้อมูล	1. ท่านคิดว่า มีปัจจัยใดบ้างที่มีส่วน ส่งเสริม/ขัดขวางการเข้าถึงข้อมูลการดูแลรักษาอาการปวดคอ	1. ท่านคิดว่า มีปัจจัยใดบ้างที่มีส่วนส่งเสริม/ขัดขวางการเข้าถึงข้อมูลการดูแลรักษาอาการปวดคอ	1.ปัจจัยใดบ้าง/บุคคลใดที่ช่วยให้ท่านเข้าถึงข้อมูลการดูแลรักษาอาการปวดคอได้ (สนับสนุนให้อยากค้นคว้าหาข้อมูล) 2. อะไรเป็นสาเหตุที่ทำให้ไม่สามารถเข้าถึง/ค้นคว้าข้อมูลเกี่ยวกับการดูแลรักษาอาการปวดคอ	1.ปัจจัยใดบ้าง/บุคคลใดที่ช่วยให้ท่านเข้าถึงข้อมูลการดูแลรักษาอาการปวดคอได้ (สนับสนุนให้อยากค้นคว้าหาข้อมูล) 2. อะไรเป็นสาเหตุที่ทำให้ไม่สามารถเข้าถึง/ค้นคว้าข้อมูลเกี่ยวกับการดูแลรักษาอาการปวดคอ
2.เพื่อศึกษาข้อมูลเชิงลึกด้านการเข้าถึงข้อมูลการป้องกันอาการปวดคอในพนักงานสำนักงาน 2.1 แหล่งข้อมูล	1. ท่านคิดว่า เราควรเผยแพร่ข้อมูลเกี่ยวกับการป้องกันอาการปวดคอให้กับพนักงานสำนักงานผ่านสื่อชนิดใด (สื่อชนิดใดที่พนักงานสำนักงานจะเข้าถึงข้อมูลง่ายที่สุด)	1. ท่านคิดว่า เราควรเผยแพร่ข้อมูลเกี่ยวกับการป้องกันอาการปวดคอให้กับพนักงานสำนักงานผ่านสื่อชนิดใด (สื่อชนิดใดที่พนักงานสำนักงานจะเข้าถึงข้อมูลง่ายที่สุด)	1. ท่านสามารถหาข้อมูลเกี่ยวกับการป้องกันอาการปวดคอได้อย่างไร (แหล่งของข้อมูลบุคคลที่ให้คำปรึกษา)	1. ท่านสามารถหาข้อมูลเกี่ยวกับการป้องกันอาการปวดคอได้อย่างไร (แหล่งของข้อมูลบุคคลที่ให้คำปรึกษา)
			2. สื่อชนิดใดที่สามารถเข้าถึงง่ายเพื่อให้ได้ข้อมูลในการป้องกันอาการปวดคอ	2. สื่อชนิดใดที่สามารถเข้าถึงง่ายเพื่อให้ได้ข้อมูลในการป้องกันอาการปวดคอ

2.2 ปัจจัยส่งเสริมและขัดขวางการเข้าถึงข้อมูล	1. ท่านคิดว่า มีปัจจัยใดบ้างที่มีส่วน ส่งเสริม/ขัดขวาง การเข้าถึงข้อมูลในการป้องกันอาการปวดคอ	1. ท่านคิดว่า มีปัจจัยใดบ้างที่มีส่วนส่งเสริม/ขัดขวาง การเข้าถึงข้อมูลในการป้องกันอาการปวดคอ	1. ปัจจัยใดบ้าง/บุคคลใดที่ช่วยให้ท่านเข้าถึงข้อมูลการป้องกันอาการปวดคอได้ (สนับสนุนให้อยากค้นคว้าหาข้อมูล) 2. อะไรเป็นสาตุที่ทำให้ไม่สามารถเข้าถึง/ค้นคว้าข้อมูลเกี่ยวกับการป้องกันอาการปวดคอ	1. ปัจจัยใดบ้าง/บุคคลใดที่ช่วยให้ท่านเข้าถึงข้อมูลการป้องกันอาการปวดคอได้ (สนับสนุนให้อยากค้นคว้าหาข้อมูล) 2. อะไรเป็นสาตุที่ทำให้ไม่สามารถเข้าถึง/ค้นคว้าข้อมูลเกี่ยวกับการป้องกันอาการปวดคอ

2. ความรู้และความเข้าใจข้อมูล

ผู้เข้าร่วมวิจัย / วัตถุประสงค์	แนวคำถาม			
	ผู้เชี่ยวชาญ	นักกายภาพบำบัด	พนักงานสำนักงาน ที่ไม่มีอาการปวดคอ	พนักงานสำนักงาน ที่มีอาการปวดคอ
1. เพื่อศึกษาข้อมูลเชิงลึกด้าน ความรู้และความเข้าใจข้อมูล การดูแลรักษาอาการปวดคอใน พนักงานสำนักงาน 1.1 ข้อมูลเกี่ยวกับปัจจัยเสี่ยง	1. อะไรเป็นสาเหตุ/ปัจจัยเสี่ยงที่ ทำให้เกิดอาการปวดคอ	1. อะไรเป็นสาเหตุ/ปัจจัยเสี่ยงที่ ทำให้เกิดอาการปวดคอ	1. อะไรเป็นสาเหตุ/ปัจจัยเสี่ยง ที่ทำให้เกิดอาการปวดคอ	1. อะไรเป็นสาเหตุ/ปัจจัยเสี่ยง ที่ทำให้เกิดอาการปวดคอ
1.2 ข้อมูลการดูแลรักษา อาการ ปวดคอ	1. ท่านคิดว่าควรให้ข้อมูลในเรื่อง ใด บ้างแก่พนักงานสำนักงาน เพื่อนำมาใช้ดูแลรักษาอาการปวด คอ	1. ท่านคิดว่าควรให้ข้อมูลในเรื่อง ใดบ้างแก่พนักงานสำนักงาน เพื่อนำมาใช้ดูแลรักษาอาการปวด คอ	1. ความรู้/ข้อมูล ในเรื่องใดที่ สามารถช่วยให้ท่านนำมาใช้ใน การดูแลรักษาอาการปวดคอ (ช่วยลด/ขจัดปัจจัยเสี่ยง ส่งเสริมการดูแลตนเอง)	1. ความรู้/ข้อมูล ในเรื่องใดที่ สามารถช่วยให้ท่านนำมาใช้ ในการดูแลรักษาอาการปวดค อ (ช่วยลด/ขจัดปัจจัยเสี่ยง ส่งเสริมการดูแลตนเอง)

	2.ท่านคิดว่า ข้อมูลที่ให้ ควร มีความละเอียดแค่ไหน และเพราะเหตุใด 3. เพราะเหตุใดข้อมูลเหล่านี้จึงมีความสำคัญ ควรให้แก่พนักงานสำนักงาน	2.ท่านคิดว่า ข้อมูลที่ให้ควรมีความละเอียดแค่ไหน และเพราะเหตุใด 3. เพราะเหตุใดข้อมูลเหล่านี้จึงมีความสำคัญ ควรให้แก่พนักงานสำนักงาน	2. ความรู้ที่ได้รับ ควรมีความละเอียดแค่ไหน ที่ทำให้ท่านสามารถนำมาใช้ได้ และทำให้ท่านเข้าใจข้อมูลเหล่านั้นได้ง่าย (สื่อที่นำเสนอข้อมูล ภาษา) 3.ท่านคิดว่า ถ้าท่านขาดความรู้เรื่องใดจึงจะทำให้เกิดอาการปวดคอ	2. ความรู้ที่ได้รับ ควรมีความละเอียดแค่ไหน ที่ทำให้ท่านสามารถนำมาใช้ได้ และทำให้ท่านเข้าใจข้อมูลเหล่านั้นได้ง่าย (สื่อที่นำเสนอข้อมูล ภาษา) 3.ท่านคิดว่า ท่านขาดความรู้เรื่องใดจึงทำให้เกิดอาการปวดคอ
1.3 ข้อมูลการป้องกันอาการปวด คอ	1. ท่านคิดว่า ควรให้ข้อมูลในเรื่องใดบ้างแก่พนักงานสำนักงาน เพื่อนำมาใช้ในการป้องกันอาการปวดคอ	1. ท่านคิดว่าควรให้ข้อมูลในเรื่องใด บ้างแก่พนักงานสำนักงาน เพื่อนำมาใช้ในการป้องกันอาการปวดคอ	1. ความรู้/ข้อมูล ในเรื่องใดที่สามารถช่วยให้ท่านป้องกันอาการปวดคอ (ช่วยลด/ขจัดปัจจัยเสี่ยง ส่งเสริมการดูแลตนเอง)	1. ความรู้/ข้อมูล ในเรื่องใดที่สามารถช่วยให้ท่านป้องกันอาการปวดคอ (ช่วยลด/ขจัดปัจจัยเสี่ยง ส่งเสริมการดูแลตนเอง)

	2.ท่านคิดว่าข้อมูลที่ให้ควรมีความละเอียด แค่ไหน เพราะเหตุใด	2.ท่านคิดว่า ข้อมูลที่ให้ควรมีความ ละเอียดแค่ไหน เพราะเหตุใด	2. ความรู้ที่ได้รับ ควรมีความละเอียดแค่ไหน จึงจะทำให้ท่านสามารถนำมาใช้ได้ และทำให้ท่านเข้าใจข้อมูลเหล่านั้นได้ง่าย (สื่อที่นำเสนอข้อมูลภาษา)	2. ความรู้ที่ได้รับ ควรมีความละเอียดแค่ไหน จึงจะทำให้ท่านสามารถ นำมาใช้ได้ และทำให้ท่านเข้าใจข้อมูลเหล่านั้นได้ง่าย (สื่อที่นำเสนอข้อมูลภาษา)
	3. เพราะเหตุใดข้อมูลเหล่านี้จึงมีความสำคัญควรให้แก่พนักงานสำนักงาน	3. เพราะเหตุใดข้อมูลเหล่านี้จึงมีความสำคัญ ควรให้แก่พนักงานสำนักงาน	3.ท่านคิดว่า ความรู้เรื่องใดช่วยท่านป้องกันการเกิดอาการปวดคอได้	3.ท่านคิดว่า ความรู้เรื่องใดช่วยท่านป้องกันการเกิดอาการปวดคอได้
			4.ท่านคิดว่า ท่านขาดความรู้เรื่องใดในการป้องกันการปวดคอ	4.ท่านคิดว่า ท่านขาดความรู้เรื่องใดในการป้องกันการปวดคอ

3. การประเมินข้อมูลและกำหนดทางเลือก

ผู้เข้าร่วมวิจัย / วัตถุประสงค์	แนวคำถาม			
	ผู้เชี่ยวชาญ	นักกายภาพบำบัด	พนักงานสำนักงาน ที่ไม่มีอาการปวดคอ	พนักงานสำนักงาน ที่มีอาการปวดคอ
1. เพื่อศึกษาข้อมูลเชิงลึกด้าน <u>การประเมินข้อมูลและกำหนดทาง เลือก</u>ในการดูแลรักษาอาการปวดคอในพนักงานสำนักงาน				
1.1 วิธีประเมินข้อมูลการดูแลรักษาอาการปวดคอ	1. ท่านคิดว่า พนักงานสำนักงานควรมีการประเมินข้อมูลเกี่ยวกับการดูแลรักษาอาการปวดคอเช่นไร	1. ท่านคิดว่า พนักงานสำนักงานควรมีการประเมินข้อมูลเกี่ยวกับการดูแลรักษาอาการปวดคอเช่นไร	1. ท่านมีวิธีการประเมินข้อมูลเกี่ยวกับการดูแลรักษาอาการปวดคอที่ได้รับอย่างไรก่อนนำมาใช้กับตนเอง	1. ท่านมีวิธีการประเมินข้อมูลเกี่ยวกับการดูแลรักษาอาการปวดคอที่ได้รับอย่างไร ก่อนนำมาใช้กับตนเอง
	2. ท่านคิดว่า พนักงานสำนักงานควรเลือกเชื่อถือแหล่งข้อมูลเกี่ยวกับการดูแลรักษาอาการปวดคอแบบใด	2. ท่านคิดว่า พนักงานสำนักงานควรเลือกเชื่อถือแหล่งข้อมูลเกี่ยวกับการดูแลรักษาอาการปวดคอแบบใด	2. ท่านเลือกเชื่อถือข้อมูลเกี่ยวกับการดูแลรักษาอาการปวดคอจากแหล่งข้อมูลใดเพราะเหตุใด	2. ท่านเลือกเชื่อถือข้อมูลเกี่ยวกับการดูแลรักษาอาการปวดคอจากแหล่งข้อมูลใดเพราะเหตุใด

1.2 ปัจจัยที่มีผลต่อการประเมินข้อมูลและกำหนดทางเลือกในการดูแลรักษาอาการปวดคอ	1. ปัจจัยใดบ้างที่มีส่วนช่วยพนักงานสำนักงานในการประเมินข้อมูลและกำหนดทางเลือกใช้ข้อมูลเกี่ยวกับการดูแลรักษาอาการปวดคอ	1. ปัจจัยใดบ้างที่มีส่วนช่วยพนักงานสำนักงานในการประเมินข้อมูลและกำหนดทางเลือกใช้ข้อมูลเกี่ยวกับการดูแลรักษาอาการปวดคอ	1. ท่านคิดว่ามีปัจจัยใดบ้างที่มีส่วนช่วยในการประเมินข้อมูลและกำหนดทางเลือกใช้ข้อมูลเกี่ยวกับการดูแลรักษาอาการปวดคอของท่าน	1. ท่านคิดว่า มีปัจจัยใดบ้างที่มีส่วนช่วยในประเมินข้อมูลและกำหนดทางเลือกใช้ข้อมูลเกี่ยวกับการดูแลรักษาอาการปวดคอของท่าน
2. เพื่อศึกษาข้อมูลเชิงลึกด้าน<u>การประเมินข้อมูลและกำหนดทางเลือกในการป้องกัน</u>อาการปวดคอในพนักงานสำนักงาน 1.1 วิธีประเมินข้อมูลการป้องกัน อาการปวดคอ	1. ท่านคิดว่า พนักงานสำนักงานควรมีการประเมินข้อมูลเกี่ยวกับการป้องกันอาการปวดคอเช่นไร	1. ท่านคิดว่า พนักงานสำนักงานควรมีการประเมินข้อมูลเกี่ยวกับการป้องกันอาการปวดคอเช่นไร	1. ท่านมีวิธีการประเมินข้อมูลเกี่ยวกับการป้องกันอาการปวดคอที่ได้รับอย่างไรก่อนนำมาใช้กับตนเอง	1. ท่านมีวิธีการประเมินข้อมูลเกี่ยวกับการป้องกันอาการปวดคอที่ได้รับอย่างไรก่อนนำมาใช้กับตนเอง
	2. ท่านคิดว่า พนักงานสำนักงานควรเลือกเชื่อถือแหล่งข้อมูลเกี่ยวกับการป้องกันอาการปวดคอแบบใด	2. ท่านคิดว่า พนักงานสำนักงานควรเลือกเชื่อถือแหล่งข้อมูลเกี่ยวกับการป้องกันอาการปวดคอแบบใด	2. ท่านเลือกเชื่อถือข้อมูลเกี่ยวกับการป้องกันอาการปวดคอจากแหล่งข้อมูลใดเพราะเหตุใด	2. ท่านเลือกเชื่อถือข้อมูลเกี่ยวกับการป้องกันอาการปวดคอจากแหล่งข้อมูลใดเพราะเหตุใด

1.2 ปัจจัยที่มีผลต่อการประเมินข้อมูลและกำหนดทางเลือกในการป้องกันอาการปวดคอ	1. ปัจจัยใดบ้างที่มีส่วนช่วยพนักงานสำนักงานในการประเมินข้อมูลและกำหนดทางเลือกใช้ข้อมูลเกี่ยวกับการป้องกันอาการปวดคอ	1. ปัจจัยใดบ้างที่มีส่วนช่วยพนักงานสำนักงานในการประเมินข้อมูลและกำหนดทางเลือกใช้ข้อมูลเกี่ยวกับการป้องกันอาการปวดคอ	1. ท่านคิดว่ามีปัจจัยใดบ้างที่มีส่วน ช่วยในการประเมินข้อมูลและกำหนดทางเลือกใช้ข้อมูลเกี่ยวกับการป้องกันอาการปวดคอของท่าน	1. ท่านคิดว่า มีปัจจัยใดบ้างที่มีส่วนช่วยในการประเมินข้อมูลและกำหนดทางเลือกใช้ข้อมูลเกี่ยวกับการป้องกันอาการปวดคอของท่าน

4. การนำมาใช้

ผู้เข้าร่วมวิจัย / วัตถุประสงค์	แนวคำถาม			
	ผู้เชี่ยวชาญ	นักกายภาพบำบัด	พนักงานสำนักงาน ที่ไม่มีอาการปวดคอ	พนักงานสำนักงาน ที่มีอาการปวดคอ
1. เพื่อศึกษาข้อมูลเชิงลึกด้านการจัดการตนเองเพื่อดูแลรักษาอาการปวดคอในพนักงานสำนักงาน				
1.1 ปัจจัยที่มีผลต่อการส่งเสริมหรือขัดขวางการนำความรู้มาใช้	1. ปัจจัย/สาเหตุ/แรงจูงใจอะไรที่มีส่วนส่งเสริมให้พนักงานสำนักงานนำความรู้ข้อมูลด้านสุขภาพมาใช้เพื่อดูแลรักษาอาการปวดคอ	1. ปัจจัย/สาเหตุ/แรงจูงใจ อะไรที่มีส่วนส่งเสริมให้พนักงานสำนักงานนำความรู้ข้อมูลด้านสุขภาพมาใช้เพื่อดูแลรักษาอาการปวดคอ	1. ปัจจัย/สาเหตุ/แรงจูงใจ อะไร ที่ทำให้คุณนำความรู้ข้อมูลที่ได้มาใช้ เพื่อดูแลรักษาอาการปวดคอ 2. ปัจจัย/สาเหตุ/แรงจูงใจ อะไรที่ทำให้คุณไม่นำข้อมูลที่ทราบมาใช้เพื่อดูแลรักษาอาการปวดคอ	1. ปัจจัย/สาเหตุ/แรงจูงใจ อะไร ที่ทำให้คุณนำความรู้ข้อมูลที่ได้มาใช้เพื่อดูแลรักษาอาการปวดคอ 2. ปัจจัย/สาเหตุ/แรงจูงใจ อะไรที่ทำให้คุณไม่นำข้อมูลที่ทราบมาใช้เพื่อดูแลรักษาอาการปวดคอ

1.2 การนำข้อมูลไปใช้	1. พนักงานสำนักงานควรนำความรู้ข้อมูลที่ได้ไปปรับใช้อย่างไร /ลักษณะใดเพื่อดูแลรักษา อาการปวดคอ 2. ท่านจะมีวิธีใด/คำแนะนำแบบใดที่จะทำให้พนักงานสำนักงานนำความรู้ข้อมูลที่ได้ไปใช้จริงๆเพื่อให้เกิดการเปลี่ยนแปลงพฤติกรรมสุขภาพ	1. พนักงานสำนักงานควรนำความรู้ข้อมูลที่ได้ไปปรับใช้อย่างไร/ ลักษณะใดเพื่อดูแลรักษาอาการปวดคอ 2. ท่านจะมีวิธีใด/คำแนะนำแบบใดที่จะทำให้พนักงานสำนักงานนำความรู้ ข้อมูลที่ได้ไปใช้จริงๆเพื่อให้เกิดการเปลี่ยนแปลงพฤติกรรมสุขภาพ	1. นำความรู้/ข้อมูลที่ได้มาใช้ปฏิบัติอย่างไรบ้างเพื่อไม่ให้เกิดอาการปวดคอ (นำความรู้/ข้อมูลที่ได้มาใช้ปฏิบัติบ่อยแค่ไหน)	1. นำความรู้/ข้อมูลที่ได้มาใช้ปฏิบัติอย่างไรบ้าง (เคยนำความรู้/ข้อมูลที่ได้มาใช้ปฏิบัติอย่างไรบ้างและบ่อยแค่ไหน)
1.3 ผลลัพธ์ทางสุขภาพ			1. เมื่อนำความรู้ที่ได้มาปฏิบัติแล้วเกิดผลเช่นไรกับสุขภาพของท่าน	1. เมื่อนำความรู้ที่ได้มาปฏิบัติแล้วเกิดผลเช่นไรกับสุขภาพของท่าน

2. เพื่อศึกษาข้อมูลเชิงลึกด้าน<u>การจัดการตนเอง</u>เพื่อ<u>ป้องกัน</u>อาการปวดคอในพนักงานสำนักงาน 2.1 ปัจจัยที่มีผลต่อการส่งเสริมหรือขัดขวางการนำความรู้มาใช้	1. ปัจจัย/สาเหตุ/แรงจูงใจอะไรที่มีส่วนส่งเสริมให้พนักงานสำนักงานนำความรู้ข้อมูลมาใช้เพื่อป้องกันอาการปวดคอ	1. ปัจจัย/สาเหตุ/แรงจูงใจอะไรที่มีส่วนส่งเสริมให้พนักงานสำนักงานนำความรู้ข้อมูลมาใช้เพื่อป้องกันอาการปวดคอ	1. ปัจจัย/สาเหตุ/แรงจูงใจอะไรที่ส่งเสริมให้คุณนำความรู้ข้อมูลที่ได้มาใช้เพื่อป้องกันอาการปวดคอ 2. ปัจจัย/สาเหตุ/แรงจูงใจอะไรที่ทำให้คุณไม่นำข้อมูลที่ทราบมาใช้เพื่อป้องกันอาการปวดคอ	1. ปัจจัย/สาเหตุ/แรงจูงใจอะไรที่ส่งเสริมให้คุณนำความรู้ข้อมูลที่ได้มาใช้เพื่อป้องกันอาการปวดคอ 2. ปัจจัย/สาเหตุ/แรงจูงใจอะไรที่ทำให้คุณไม่นำข้อมูลที่ทราบมาใช้เพื่อป้องกันอาการปวดคอ
2.2 การนำข้อมูลไปใช้	1. พนักงานสำนักงานควรนำความรู้ข้อมูลที่ได้ไปปรับใช้อย่างไร/ลักษณะใดเพื่อให้เกิดการป้องกันอาการปวดคอ	1. พนักงานสำนักงานควรนำความรู้ข้อมูลที่ได้ไปปรับใช้อย่างไร/ลักษณะใดเพื่อให้เกิดการป้องกันอาการปวดคอ	1. นำความรู้/ข้อมูลที่ได้มาใช้ปฏิบัติอย่างไรบ้างเพื่อไม่ให้เกิดอาการปวดคอ (นำความรู้/ข้อมูลที่ได้มาใช้ปฏิบัติบ่อยแค่ไหน)	1. นำความรู้/ข้อมูลที่ได้มาใช้ปฏิบัติอย่างไรบ้างเพื่อไม่ให้เกิดอาการปวดคอ (นำความรู้/ข้อมูลที่ได้มาใช้ปฏิบัติบ่อยแค่ไหน)

	2. ท่านมีวิธีใด/คำแนะนำแบบใดที่จะทำให้พนักงานสำนักงานนำความรู้ข้อมูลที่ได้ไปใช้จริงๆเพื่อให้เกิดการเปลี่ยนแปลงพฤติกรรมสุขภาพ	2. ท่านมีวิธีใด/คำแนะนำแบบใดที่จะทำให้พนักงานสำนักงานนำความรู้ข้อมูลที่ได้ไปใช้จริงๆเพื่อให้เกิดการเปลี่ยนแปลงพฤติกรรมสุขภาพ		
2.3 ผลลัพธ์ทางสุขภาพ			1. เมื่อนำความรู้ที่ได้มาปฏิบัติแล้วเกิดผลเช่นไรกับสุขภาพของท่าน	1. เมื่อนำความรู้ที่ได้มาปฏิบัติแล้วเกิดผลเช่นไรกับสุขภาพของท่าน

APPENDIX E

ETHICAL APPROVAL

AF 01-12

คณะกรรมการพิจารณาจริยธรรมการวิจัยในคน กลุ่มสหสถาบัน ชุดที่ 1 จุฬาลงกรณ์มหาวิทยาลัย
อาคารสถาบัน 2 ชั้น 4 ซอยจุฬาลงกรณ์ 62 ถนนพญาไท เขตปทุมวัน กรุงเทพฯ 10330
โทรศัพท์: 0-2218-8147 โทรสาร: 0-2218-8147 E-mail: eccu@chula.ac.th

COA No. 088/2557

ใบรับรองโครงการวิจัย

โครงการวิจัยที่ 050.1/57	:	การสร้างแบบสอบถามความแตกฉานด้านสุขภาพเพื่อทำนายอาการปวดคอแบบไม่เจาะจงในคนทำงานสำนักงาน
ผู้วิจัยหลัก	:	นางสาวกานต์ธีรา อินประดับ
หน่วยงาน	:	คณะสหเวชศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

คณะกรรมการพิจารณาจริยธรรมการวิจัยในคน กลุ่มสหสถาบัน ชุดที่ 1 จุฬาลงกรณ์มหาวิทยาลัย ได้พิจารณา โดยใช้หลัก ของ The International Conference on Harmonization – Good Clinical Practice (ICH-GCP) อนุมัติให้ดำเนินการศึกษาวิจัยเรื่องดังกล่าวได้

ลงนาม.....
(รองศาสตราจารย์ นายแพทย์ปรีดา ทัศนประดิษฐ)
ประธาน

ลงนาม.....
(ผู้ช่วยศาสตราจารย์ ดร.นันทรี ชัยชนะวงศาโรจน์)
กรรมการและเลขานุการ

วันที่รับรอง : 16 มิถุนายน 2557 **วันหมดอายุ** : 15 มิถุนายน 2558

เอกสารที่คณะกรรมการรับรอง

1) โครงการวิจัย
2) ข้อมูลสำหรับกลุ่มประชากรหรือผู้มีส่วนร่วมในการวิจัยและใบยินยอมของกลุ่มประชากรหรือผู้มีส่วนร่วมในการวิจัย
3) ผู้วิจัย
4) แบบสอบถาม

คณะกรรมการพิจารณาจริยธรรมการวิจัยในคน กลุ่มสหสถาบัน ชุดที่ 1

เลขที่โครงการวิจัย 050.1/57
วันที่รับรอง 16 มิ.ย. 2557
วันหมดอายุ 15 มิ.ย. 2558

เงื่อนไข

1. *ข้าพเจ้ารับทราบว่าเป็นการผิดจริยธรรม หากดำเนินการเก็บข้อมูลการวิจัยก่อนได้รับการอนุมัติจากคณะกรรมการพิจารณาจริยธรรมการวิจัยฯ*
2. *หากใบรับรองโครงการวิจัยหมดอายุ การดำเนินการวิจัยต้องยุติ เมื่อต้องการต่ออายุต้องขออนุมัติใหม่ล่วงหน้าไม่ต่ำกว่า 1 เดือน พร้อมส่งรายงานความก้าวหน้าการวิจัย*
3. *ต้องดำเนินการวิจัยตามที่ระบุไว้ในโครงการวิจัยอย่างเคร่งครัด*
4. *ใช้เอกสารข้อมูลสำหรับกลุ่มประชากรหรือผู้มีส่วนร่วมในการวิจัย ใบยินยอมของกลุ่มประชากรหรือผู้มีส่วนร่วมในการวิจัย และเอกสารเชิญเข้าร่วมวิจัย (ถ้ามี) **เฉพาะที่ประทับตราคณะกรรมการเท่านั้น***
5. *หากเกิดเหตุการณ์ไม่พึงประสงค์ร้ายแรงในสถานที่เก็บข้อมูลที่ขออนุมัติจากคณะกรรมการ ต้องรายงานคณะกรรมการภายใน 5 วันทำการ*
6. *หากมีการเปลี่ยนแปลงการดำเนินการวิจัย ให้ส่งคณะกรรมการพิจารณารับรองก่อนดำเนินการ*
7. *โครงการวิจัยไม่เกิน 1 ปี ส่งแบบรายงานสิ้นสุดโครงการวิจัย (AF 03-12) และบทคัดย่อผลการวิจัยภายใน 30 วัน เมื่อโครงการวิจัยเสร็จสิ้น สำหรับโครงการวิจัยที่เป็นวิทยานิพนธ์ให้ส่งบทคัดย่อผลการวิจัย ภายใน 30 วัน เมื่อโครงการวิจัยเสร็จสิ้น*

AF 01-12

คณะกรรมการพิจารณาจริยธรรมการวิจัยในคน กลุ่มสหสถาบัน ชุดที่ 1 จุฬาลงกรณ์มหาวิทยาลัย
254 อาคารจามจุรี 1 ชั้น 2 ถนนพญาไท เขตปทุมวัน กรุงเทพฯ 10330
โทรศัพท์/โทรสาร: 0-2218-3202 E-mail: eccu@chula.ac.th

COA No. 102/2559

ใบรับรองโครงการวิจัย

โครงการวิจัยที่ 050.1/57 : การสร้างแบบสอบถามความแตกฉานด้านสุขภาพเพื่อทำนายอาการปวดคอแบบไม่เจาะจงในคนทำงานสำนักงาน

ผู้วิจัยหลัก : นางสาวกานต์ธีรา อินประดับ

หน่วยงาน : คณะสหเวชศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

คณะกรรมการพิจารณาจริยธรรมการวิจัยในคน กลุ่มสหสถาบัน ชุดที่ 1 จุฬาลงกรณ์มหาวิทยาลัย ได้พิจารณา โดยใช้หลัก ของ The International Conference on Harmonization – Good Clinical Practice (ICH-GCP) อนุมัติให้ดำเนินการศึกษาวิจัยเรื่องดังกล่าวได้

ลงนาม.....
(รองศาสตราจารย์ นายแพทย์ปรีดา ทัศนประดิษฐ)
ประธาน

ลงนาม.....
(ผู้ช่วยศาสตราจารย์ ดร.นันทรี ชัยชนะวงศาโรจน์)
กรรมการและเลขานุการ

วันที่รับรอง : 16 มิถุนายน 2559 **วันหมดอายุ** : 15 มิถุนายน 2560

เอกสารที่คณะกรรมการรับรอง

1) โครงการวิจัย
2) ข้อมูลสำหรับกลุ่มประชากรหรือผู้มีส่วนร่วมในการวิจัยและใบยินยอมของกลุ่มประชากรหรือผู้มีส่วนร่วมในการวิจัย
3) ผู้วิจัย
4) แบบสอบถาม

เอกสารที่โครงการวิจัย 050.1/57
วันที่รับรอง 16 มิ.ย. 2559
วันหมดอายุ 15 มิ.ย. 2560

เงื่อนไข

1. ข้าพเจ้ารับทราบว่าเป็นการผิดจริยธรรม หากดำเนินการเก็บข้อมูลการวิจัยก่อนได้รับการอนุมัติจากคณะกรรมการพิจารณาจริยธรรมการวิจัยฯ
2. หากใบรับรองโครงการวิจัยหมดอายุ การดำเนินการวิจัยต้องหยุด เมื่อต้องการต่ออายุต้องขออนุมัติใหม่ล่วงหน้าไม่ต่ำกว่า 1 เดือน พร้อมส่งรายงานความก้าวหน้าการวิจัย
3. ต้องดำเนินการวิจัยตามที่ระบุไว้ในโครงการวิจัยอย่างเคร่งครัด
4. ใช้เอกสารข้อมูลสำหรับกลุ่มประชากรหรือผู้มีส่วนร่วมในการวิจัย ใบยินยอมของกลุ่มประชากรหรือผู้มีส่วนร่วมในการวิจัย และเอกสารเชิญเข้าร่วมวิจัย (ถ้ามี) **เฉพาะที่ประทับตราคณะกรรมการเท่านั้น**
5. หากเกิดเหตุการณ์ไม่พึงประสงค์ร้ายแรงในสถานที่เก็บข้อมูลที่ขออนุมัติจากคณะกรรมการ ต้องรายงานคณะกรรมการภายใน 5 วันทำการ
6. หากมีการเปลี่ยนแปลงการดำเนินการวิจัย ให้ส่งคณะกรรมการพิจารณารับรองก่อนดำเนินการ
7. โครงการวิจัยไม่เกิน 1 ปี ส่งแบบรายงานสิ้นสุดโครงการวิจัย (AF 03-12) และบทคัดย่อผลการวิจัยภายใน 30 วัน เมื่อโครงการวิจัยเสร็จสิ้น สำหรับโครงการวิจัยที่เป็นวิทยานิพนธ์ให้ส่งบทคัดย่อผลการวิจัย ภายใน 30 วัน เมื่อโครงการวิจัยเสร็จสิ้น

VITA

Mrs. Kantheera Areerak was born on Febuary 8th 1982 in Phetchabun, Thailand. In 2005, she graduated a Bachelor degree of Science (Physical Therapy) from Mahidol University. In 2009, she graduated a Master degree of Science (Physical Therapy) from Mahidol University. After graduation, Kantheera shortly worked as a physical therapist at Yunhee hospital. In 2010, she worked as a assistant instructor at Faculty of Physical Therapy, Mahidol University. In June 2012, she studied for a Doctor of Philosophy degree in Physical Therapy program at Faculty of Allied Health Sciences, Chulalongkorn University