HEALTH LOCUS OF CONTROL AND PAIN TOLERANCE AMONG GROUPS WITH DIFFERENT SOCIO-CULTURAL CHARACTERISTICS

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ABSTRACT

A number of studies have positively correlated the experience of pain with socio-cultural factors. These studies are a part of a not enough developed area of researcher's demands to identify factors that might contribute to the individual's pain experience. These could include somatic (physical) and psychological factors, as well as contextual factors, such as situational and cultural considerations. These articles have discussed several socio-cultural factors that contribute to individual differences in pain perception, including ethnicity, sex and psychological variables (health locus of control). These factors have been discussed in the context of the biopsychosocial model of pain, which posits that pain perception is influenced by interactions among biological, psychosocial, and socio-cultural factors. 62 students were involved in this investigation as volunteers. 30 students self defined their ethnicity as Turkish and 32 self defined their ethnicity as Bulgarian. Cold pressure test and Health locus of control questionnaire were used. Cold pressure test was used to identify pain tolerance toward experimentally induced pain. The result of investigation suggests that health locus of control correlated with ethnicity. In addition, pain tolerance ranged within different socio-cultural groups. Finally, the scientific implications of individual differences in pain are discussed.

Key words: health locus of control, pain tolerance, ethnicity

INTRODUCTION

Ethnicity designates a group of people who share same social environment, distinguished by behavior, culture, history, beliefs and traditions. According to some authors, combination of biological, psychological and socio-cultural factors is associated with differences in pain perception (1-4). As ethnicity refers to biological, social, psychological and cultural characteristics of the individual, it may be a factor contributing to differences in pain perception (5).

Several studies explore the relation between ethnicity and perception of experimentally induced pain. Walsh and colleagues (1989) found out that pain tolerance to cold pressor test in the groups of African-Americans and Hispanic-Americans is lower, compared to

non- Hispanic White Americans (6). Other studies examined cold pain threshold and pain tolerance of Americans from different ethnic backgrounds (7-10) or explore tolerance only (11-12).

Results of these studies indicate moderate differences in threshold and significant differences in tolerance to experimentally induced pain between ethnic groups. In all studies African Americans show lower thresholds and tolerance to cold pain, compared to Latinos or non- Hispanic Whites. Another study found a lower threshold and tolerance to experimentally induced pain in Asian-Americans than European Americans (13). Annie Y. Hsieh (2010) explored cold-pressor pain experience of Chinese and European Canadian students (14). The study found differences in pain tolerance, as Chinese Canadians have lower tolerance to cold pain, compared to their European colleagues. In general, studies find significant differences in tolerance and none or moderate differences in

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pain threshold of experimentally induced cold pain between different ethnic groups.

In the literature there are data that socio-cultural factors often influence health locus of control (15-18). Health locus of control is a theoretical construct that indicates the individual beliefs regarding the factors that control their health (19). Internal health locus of control refers to the belief that health depends on internal factors such as one's own behavior, skills, personal qualities, individual attitudes. The external health locus of control is associated with belief that health depends on chance, fate or powerful others. These individual beliefs are influenced by prevailing concepts of health and illness in the given culture (20). Many authors investigate the influence of socio-cultural factors on health locus of control in different ethnic groups (21-23). Bermejo (1996) established differences in health locus of control among Spaniards living in Spain, Spaniards living in Germany and the Germans (24). He found that Germans show a higher internal health locus of control and Spaniards have a higher external health locus of control. The results are due to socio-cultural characteristic of respondents. Here quoted studies show that the cultural differences in health beliefs represent an actual problem in the increasingly globalized world.

PURPOSE

The purpose of study is to examine differences in perception of experimentally induced pain and health locus of control among people with different ethnicity.

PERSONS EXAMINED

62 volunteers age between 17 and 40 years. Male-17, female - 45. All subjects are students in medicine, nursing and social work from Trakia University, Stara Zagora. The study was approved by the local ethical committee at Trakia University. An informed consent was obtained from all participants before initiation of the experimental procedures. All participants completed questionnaires about their sociodemographic background. 32 subjects self defined their ethnicity as Bulgarian, 30 subjects self defined their ethnicity as Turkish.

METHODS

1. Cold pressor test (6)

Cold pressor test was used to measure pain perception. The dominant hand was immersed up to the wrist in ice-chilled water ($4 \pm 0.5^\circ\text{C}$). The participants were instructed to hold their left hand in the ice water as long as possible. To

determine pain threshold each subject was instructed to say "painful" when the cold stimulus first became painful. The time (sec) until the participant first reported pain was used as the pain threshold-measure. To measure pain tolerance, the subject was instructed to "try to hold his/her hand in the icy water as long as possible," but to lift it out when the pain became too intensive. The time (sec) until the participant withdrew his/her hand from the water was used as the pain tolerance-measure. 7 minutes was the maximum immersion duration, but participants were not informed of the 7-minute limit. Blood pressure and heart rate were measured before, during water immersion and immediately after removing the arm from the cold water. Pain threshold and pain tolerance were recorded.

1. Multidimensional health locus of control scales (MHLC form A) (25)

MHLC consists of 18 items with possible answers on 6 point Likert scale. MHLC consists of the following scales:

1. Internal Health locus of control Scale (IHLC) - measures the individual beliefs, that health and disease depend on internal factors such as one's own behavior and personal responsibility.
2. Powerful Others Health locus of control Scale (PHLC) - measures the individual beliefs, that external factors in the face of other people (family, friends, doctors, hospital staff) have a major influence on health or disease recovery.
3. Chance Health locus of control Scale (CHLC) - measures the beliefs that chance, luck or fate have the strongest impact on the health or the course of the disease.

MHLC measure health locus of control as a multidimensional construct with three subscales as statistically independent. MHLC scales are interpreted separately and are not designed to create a continuum of external to internal locus of control. The higher values on the subscale, the stronger are the beliefs congruent with the subscale.

RESULTS AND DISCUSSION

Our study finds statistically significant differences in tolerance to experimentally induced pain among students with Bulgarian and Turkish ethnicity and students with Bulgarian ethnicity have higher tolerance (Table 1) There are no statistically significant differences in pain thresholds in both ethnic groups.

Table 1. Differences between pain tolerance among students from Bulgarian and Turkish ethnic groups.

	Ethnicity	Mean	Std.Deviation	t	sig.
Pain tolerance	Bulgarian	297,93	160,617	t=1,89	p<0,05
	Turkish	184,89	156,004		

These results are consistent with other studies results about significant differences in pain tolerance and lack or non significant differences in pain thresholds in different ethnic groups (7,14). One of the factors for higher pain tolerance of students with Bulgarian ethnicity is probably connected with their higher internal health locus of control. Another study with cold pressor test with students volunteers posits similar result (26). It is also found that the locus of control in a situation of pain is a predictor of tolerance to pain, but not the threshold and pain intensity (27). These results are not confirmed categorically in the literature. For example, research by cold pressor test has not found

differences in pain tolerance between individuals with external and internal locus of control (28).

Our study finds significant differences in IHLC scale between two studied ethnic groups. Students with Bulgarian ethnicity have higher mean scores on a IHLC scale, compared to students with Turkish ethnicity. There are no statistically significant differences in the PHLC scale. Students with Bulgarian ethnicity show higher mean scores on PHLC, compared to students with Turkish ethnicity. CHLC scale values of students with Bulgarian and Turkish ethnicity are similar (**Figure 1**).

Figure 1. IHLC, PHLC, CHLC scales among students from Bulgarian and Turkish ethnic groups

In summary, our study finds that students with Bulgarian ethnicity have stronger beliefs about the impact of their own behavior on health, compared to students with Turkish ethnicity. There is a scientific evidence that cultures with prevailing individualism enhance internal locus of control, on the other hand culture with prevailing collectivism enhance external locus of control (29). The main difference in the views of individualistic and collectivistic cultures is the way in which individuals perceive themselves and others. In individualistic cultures the person perceives himself as independent and responsible for the achieved results. It is supposed that in this culture individuals may have high values on IHLC. In collectivistic cultures, the individual

is perceived as interdependent with one another or group. In such cultures it is more likely people to have high values on PHLC. We assume that the differences in IHLC between both ethnic groups are due to the fact that individualism dominates in Bulgarian cultural tradition and collectivism- in Turkish cultural tradition.

There are not significant differences in IHLC, PHLC, CHLC among students with different specialty. The highest values of internal health locus of control belong to medicine students ($X = 28,5$; $SD = 3,27$), compared to nursing students ($X = 26,2$; $SD = 4,94$) and social work students ($X = 26,5$; $SD = 6,1$). People with high values on IHLC feel responsible for their

health. In case of illness, they are trying to understand how their behavior has affected the disease. On the other hand, they are more likely to implement activities of health promotion, to seek more health related information and prevent possible risk factors. The results are in line with the main activities in present academic and future professional activities of the students. There are similar values on CHLC among the examined students, regardless of their specialty. Our research establishes higher values on PHLC in medical specialties students compared to non-medical specialties students. The highest values are measured on PHLC in medicine ($X = 24$; $SD = 4,85$), while the lowest values – in a group of social work students ($X = 21,2$; $SD = 6,3$). Beliefs about own responsibility for health and powerful others influence on health and illness in medicine and nursing students are in line with the significance of their chosen professional role. These beliefs are the most constructive and positively associated with health seeking behavior and compliance in illness behavior (19).

CONCLUSIONS

1. Students with Bulgarian ethnicity show higher tolerance to experimentally induced pain and higher Internal health locus of control compared to the students with Turkish ethnicity.
2. There are no significant differences in the beliefs of both groups of students about the importance of external factors, which would put them as typical representatives of individualistic and collective culture. This result is probably due to the fact that all the students were born and live in Bulgaria.
3. The internal health locus of control implies higher pain tolerance, which is a prerequisite for further studies and explanations for this tendency.

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