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Interpretation of Kneeling

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Abstract

Hypothesis: Interpretations of kneeling are different in different cultures.

Background: Kneeling is best defined as a position where at least one knee is in contact with some part of the environment (usually the ground), and the body weight is being supported predominantly through the knee(s). What is meant by "kneeling" is remarkably different in different cultures because of the diverse patterns of kneeling, such as upright kneeling on one knee, upright kneeling on two knees, and high flexed kneeling patterns.

Methods: One group (40 Muslims) of normal individuals who attended their prayers in a mosque and another group who attended their prayers in a Roman Catholic church (40 Christians) were selected to answer a questionnaire on the importance of kneeling function for them, how often do they need to kneel and to choose the best image to explain what they understood kneeling to mean from images of four different kneeling patterns.

Results: Muslim group: 23 males and 17 females answered the questionnaire. High flex kneeling with both hands on the ground was considered by 24 individuals to be the best definition of kneeling, 16 individuals chose High flex kneeling with the back of the thighs on the heels and non of them chose Upright kneeling patterns, and all of the 40 individuals considered kneeling as an important function for their daily living activities and religious practices. Roman Catholic Christian group: 27 males and 13 females answered the questionnaire. Upright kneeling on both knees was considered to be the best definition of kneeling for all participants. The ability to kneel was considered important by 39 individuals, 24 participants kneel on daily basis, 14 participants kneel on weekly basis and 2 kneel occasionally.

Conclusions: The observations in this study provide insight into the differences in the definition of the kneeling patterns in 2 culturally different populations with different demands on knee flexion, the information could guide the design of new assessment tools that will be culturally appropriate in all respects and include all kneeling patterns.

Keywords: Kneeling; Interpretation; Ability; Knee; Flexion; Culture

Introduction

Kneeling is best defined as a position where at least one knee is in contact with some part of the environment (usually the ground), and the body weight is being supported predominantly through the knee(s) [1]. In Japan, kneeling is the position commonly used for daily activities such as eating, socializing, and religious or traditional ceremonies such as the tea ceremony [2-6]. The ability to kneel is considered to be particularly important for older women in order that they can continue socializing and performing religious activities in their accustomed manner. Even in non-traditional Japanese homes people continue to sit on the floor, and many restaurants have tatami rooms where people kneel to dine [3].

Kneeling is also a common position in Islamic countries due to religious practices. Those who are faithful to Islamic practices perform a significant number of deep knee flexions over a lifetime. For example, a person following Islamic practices may be expected to pray in a mosque or the home from the age of 7 years, five times a day [7]. In Pakistan, it is estimated that those who pray regularly may flex their knees as often as 70 times a day [8]. It is postulated that the poorer population probably had little time for praying as they worked long hours at manual labour or in the fields so perhaps kneel less through the day than the more affluent population [8]. Hefzy et al. used radiography to study the kinematics of deep knee flexion in the prayer positions in five healthy Saudi Arabian men [9]. They identified that the prayer involves two primary motions: (a) kneeling with the knees fully flexed (150°-165°) and torso upright; and (b) moving down from a kneeling to bowing position (head touching the ground) with knees eventually decreasing flexion to 90°.

What is meant by "kneeling" is remarkably different in different cultures because of the diverse patterns of kneeling, such as upright kneeling on one knee, upright kneeling on two knees, and high flexed kneeling patterns. Humans can assume more than 1000 different positions that are used in combination with movement to perform ADLs [2]. Culture has a significant impact on how ADLs are performed and the positions used in the west and east often differ [7,10,11].

In many parts of Asia, a chair is not commonly used either at work or home, as sitting without external support is considered comfortable. Floor sitting, using static positions such as squatting, kneeling, or sitting cross-legged, are the positions most commonly used in Asia [2,5,12-17].

Materials and Methods

One group (Muslims) of normal individuals who attended their prayers in a mosque and another group who attended their prayers in a Roman Catholic church (Christians) were selected to answer a questionnaire on the importance of kneeling function for them, how often do they need to kneel and to choose the best image to explain what they understood kneeling to mean from images of four different kneeling patterns (Figure 1).

40 individuals in Muslim group and 40 individuals in Christian group answered the questionnaire without difficulties in the mosque

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and the church. Descriptive analysis for the responses of interpretation of kneeling between the two groups, data was expressed as numbers (%) or means ± SD. Chi squared test was used to test the hypothesis, the P- Value of <0.05 was considered as significant. With sample size of 80, a statistical power of 0.7 achieved given an effect size d of 0.5.

Results

Muslim group

23 males and 17 females answered the questionnaire, the mean age (49.3 years ± 15.1). High flex kneeling with both hands on the ground (P4 image) was considered by 24 individuals to be the best definition of kneeling, 16 individuals chose P3 image (High flex kneeling with the back of the thighs on the heels) and non of them chose P1 or P2 positions (Upright kneeling), and all of the 40 individuals considered kneeling as an important function for their daily living activities and religious practices.

Roman Catholic Christian group

27 males and 13 females answered the questionnaire, the mean age (40.5 years ± 7.8). Upright kneeling on both knees (P2 image) was considered to be the best definition of kneeling for all participants. The ability to kneel was considered important by 39 individuals, 24 participants kneel on daily basis, 14 participants kneel on weekly basis and 2 kneel occasionally.

Both younger and older Muslim participants (males and females) selected the high flex kneeling (P3 and P4) as the best interpretation of kneeling, on the other hand younger and older Christian participants (males and females) selected the upright kneeling (P2) (Figures 2-4).

The likert scale (0-10) responses analysed to assess the importance of kneeling function for Muslims and Christians, two groups identified; Group A=participants scored <5 and Group B=participants scored ≥ 5 (Table 1). All Muslims scored ≥ 5 and non of them scored <5, on the other hand; 36 Christians scored ≥ 5, and 4 scored <5, chi- square used to test the significance difference between Group A and B, P=0.04.

Discussion

There is a lack of documented research on the interpretation of the kneeling function in different cultures. As there are a variety of different ways to kneel, the definition and the importance of the term kneelingrf is likely to differ in different cultures. These variations in the importance of kneeling are also likely to be increased by the differences in the daily living activities of different cultures/geographical regions. The results of the current study confirmed the hypothesis. Both groups

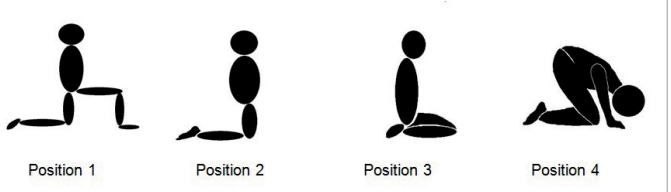

Figure 1: Kneeling patterns.

Scale	Muslims	Christians
<5	0	4
≥ 5	40	36

Table 1: Likert scale (0-10) - Importance of kneeling function (Group A = <5, Group B = ≥ 5).

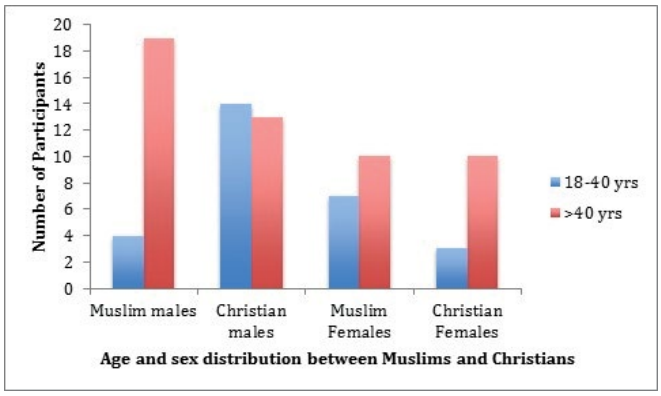

Figure 2: Age and sex distribution in Muslim and RC Christian groups.

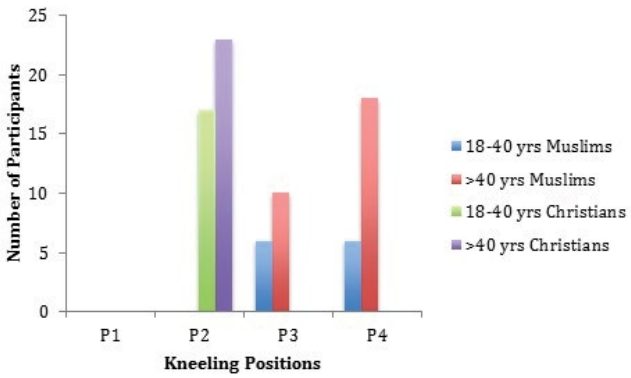

Figure 3: Patterns of kneeling positions related to the age groups in both Christian and Muslim participants.

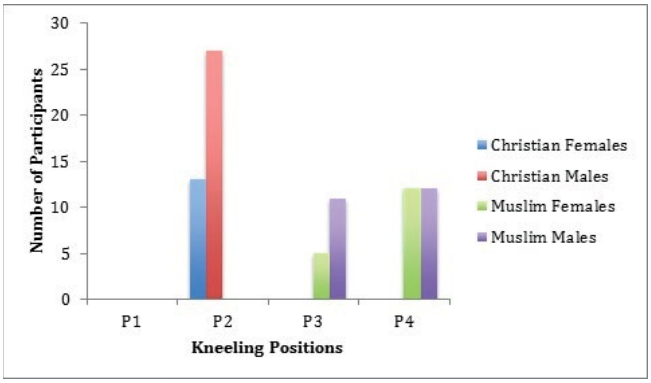

Figure 4: Patterns of kneeling positions related to the sex in both Christian and Muslim groups.

(Muslim and Christian) showed the importance of kneeling function for them. Weiss et al. conducted a study in Texas, on patients who had knee replacements, quantifying their function and mobility after surgery. Their results showed that fifty- eight percent of patients kneeled occasionally. When patients were asked about the level of importance of each activity, 52% reported that kneeling was necessary to them, but 72% said that they could not kneel without some knee symptoms [18].

The high flex kneeling position was the best definition of kneeling for the Muslim Group. For the Christian group, the upright kneeling

position on both knees was the most common definition of kneeling. These positions would be suitable for their religious practices. The responses noticed in both groups might be because of their religious background. The interpretation of kneeling could be influenced by the daily living style, in some Japanese studies kneeling was referred to as 'squatting Japanese style'. In each position, ROM may also vary depending upon the particular activity performed [19]. Unnanantana in 1997 assessed 465 Thai TKAs patients. He found that the Thai patients in need of more than 110° of knee flexion for their daily activities. Postures required in Thai culture included kneeling, squatting, and sitting cross-legged. He emphasised the fact that most published papers on TKA investigated European or American patients. These findings cannot be applied to Thai patients who have significant differences in general -morphometry, weight and lifestyle [20]. The findings from this study of a Thai population may well apply to some other ethnic groups such as Japanese, Chinese, Arabs and Africans.

Ahlberg et al. [21] carried out a comparative study to assess the differences in the normal range of motion between Scandinavian and Saudi Arabian male subjects. Their results showed that most of the Saudi men had maximal knee flexion, with the heel reaching the posterior surface of the upper thigh. The average range of flexion was 15 degrees greater than the Scandinavian subjects [21,22]. Ahlberg explained that one of the possible reasons for the increased ROM in Saudi men was their different activities of daily living i.e., sitting cross-legged, squatting and kneeling.

Populations in the East and the Middle East are more flexible than in the West [21], Therefore, it has been postulated that the Eastern populations would find it easier to floor-sit, and may manage to assume many positions requiring substantial flexibility and hence their definition of kneeling will differ than others who had a different lifestyle. The mean age difference noticed between the two groups, 49.3 years ± 15.1 for the Muslim group and 40.5 years ± 7.8 for the Christian group might have no effect on the kneeling interpretation as both younger and older participants chose the same kneeling pattern. The level of importance assessed by a simple scale ranges from 0 to10 in this study showed how important this function for them (40 Muslims and 36 Christians), hence; more considerations of the kneeling function in knee function questionnaires required. Very few research articles have covered this subject and caution must be exercised when making generalisations, as there could be significant diversity within cultures, ethnic groups, and between individuals.

Conclusion

This study stresses the importance of culture in any questionnaire related to the ability to kneel. The observations in this study provide insight into the differences in the definition of the kneeling patterns in 2 culturally different populations with different demands on knee flexion, the information could guide the design of new assessment tools that will be culturally appropriate in all respects and include all kneeling patterns in a clearer way. A culturally appropriate questionnaire's design has a greater chance of being successful in meeting an individual's needs and a more reliable tool for assessment of kneeling function.

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