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RESEARCH ARTICLE

OSTEOARTHRITIS - GENERAL UNDERSTANDING OF OSTEOARTHRITIS AND IMPORTANCE OF ADHERENCE TO ITS TREATMENT AMONGST STUDENTS AND STAFF FROM UNIVERSITY OF WOLVERHAMPTON

***Perry Otchere, Hana Morrissey and Patrick Anthony Ball**

School of Pharmacy, Faculty of Science and Engineering, University of Wolverhampton, United Kingdom

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Corresponding author:* **Perry Otchere

ABSTRACT

Background: OA is the commonest form of arthritis, affecting around 8.75 million people in the UK and a leading cause of pain and disability worldwide. According to the charity Arthritis Care, approximately 27,000 arthritis sufferers are under 25 years of age and, of these, around 12,000 are children. Pharmacists play a significant role in recognising early signs of OA, as early diagnosis can prevent unnecessary damage and limiting problems in the future and providing advice on medicines and lifestyle measures to ease symptoms. **Aims:** The aim of this study is to determine any differences in the general understanding of osteoarthritis condition and the importance of adherence to its treatments amongst students of varying educational backgrounds and staff. **Settings and Design:** Cross section study done by distributed a well-structured questionnaire designed specifically to this study and distributed to a random sample of population in UoW. **Methods and Material:** A structured questionnaire was designed for data collection by the student researcher based upon review of literature under the guidance of the project supervisor. It includes four parts of 20 multiple – choice style questions and 1 question for any other comments regarding the study or OA. Questionnaire was distributed to those who voluntarily stopped at a stand display. **Results:** Out of 50 participants there were 17 (34%) males and 33 (66%) females with common age group (< 22) years with percentage of (46%), most of participants were Asian/Asian British 16 (32%).(60%) of participants have heard about OA. Questions based on general understanding of OA and treatments such as part of joint affected, some signs and symptoms and medications yielded poor results. However, questions based on some signs and symptoms, some non - pharmacological treatment medications and life style changes achieved higher results. Participants had limited knowledge of some non – pharmacological treatments used in OA. **Conclusion**: This study shows that students and staff have an average general understanding about OA. Education, advice and access to information about OA are important. More programs about risk factors, lifestyle changes, causes and complications of OA should be implemented especially during national health awareness day to educate students and staff about the condition.

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INTRODUCTION

Osteoarthritis (OA) is a complex, multifactorial disease. It is one of the most common chronic health conditions, leading to pain and disability among adults,which impacts heavily on health and quality of life(Research UK, 2013). However, there are modifiable risk factors such as obesity and joint injury which, if addressed earlier,can reduce the impact of osteoarthritis (Golightly et al., 2015).OA predominantly develops later in life, usually after 50 years, but may start sooner in the case of joint injury such as in elite athletes and ballet dancers (OARSI.org, 2018). OA is characterised by a gradual process of tissue destruction and remodelling that affects all the structures of the synovial joint, together with destruction of articular cartilage, remodelling of the underlying bone and synovitis(Rapoza, 2017). The exact cause of OA is not fully understood but it is usually accompanied by histological changes such as synovial hypertrophy and hyperplasia, with macrophage and lymphocyte recruitment, angiogenesis, and fibroblast proliferation(Uhalte et al., 2017). In the osteochondral unit, changes include loss of chondrocytes in the superficial zone with proliferation in deeper zones; loss of extracellular matrix; vascularization and neuronal ingrowth across the tidemark between calcified and non-calcified cartilage; and remodelling of subchondral bone, resulting in sclerosis, cysts and osteophyte formation (Uhalte et al., 2017).According to Arthritis Research UK (2013) 1 in 3 people aged 45 years are diagnosed with OA which is costing the National Health Service billions of pounds each year (Versusarthritis.org, 2018).

When the hands are affected, OA can prevent people being able to undertake everyday activities, such as fastening buttons, writing and opening food containers. OA in the hips or knees can restrict mobility; limit walking, climbing stairs, bathing and personal care, and driving a car. In advanced cases, OA is a substantial barrier to people's mobility and independence, and significantly compromises the wellbeing and quality of life (Healthinnovationnetwork.com). Some of the factors that contribute to developing OA are listed in table 1 and the main symptoms of OA are listed in table 2 (Versusarthritis.org, 2018).

Method and Design: Traditionally, patient health education was directed at changing behaviours such as smoking cessation or weight management. More recently, the importance of psychological, social and environmental variables that may prevent chronic diseases, or their associated complications and improve health outcomes became a focus.. In keeping with the concept of an holistic patient healthcare model, patients are primarily viewed as partners in their health care planning and recipients of health education about their condition and medications (Barlow, 2002).Community, family members and friends play a significant role in motivating and reinforcing behavioural change.A meta-analysis compared the effectiveness of patient education and pharmacological treatment, among participants with OA, showed patient education was, on average, 20% as effective as their pharmacological treatment in reducing pain, but ineffective on functional disability(Barlow, 2002).

Aim: The aim of this study was to examinethe understanding of OA and the importance of adherence to OA treatments among local populationfrom varying educational and occupational backgrounds at University of Wolverhampton (UoW). Secondly to increase awareness of this condition to help reduce risks, improve adherence to its treatments and improve one's quality of life.

MATERIALS AND METHODS

This was a cross sectional study, questionnaire-based. Ethical approval was gained from the School of Pharmacy Ethics Review Board. The questionnaire along with participants' information leaflets and the invitation letters were distributed to staff and students who voluntarily stopped at the health promotion station enquiring about the study.The questionnaire includedfour parts and 20 multiple – choice style questions. Consent was by the participant independently completing and handing in the questionnaire. After this they were given a leaflet on OA and furtherexplanation and answer for any further questions they asked. No personal identifiers were collected. The display was one day from 9am to 5pm. Participants were above the age of 18 years and current students or staff at the University.A total of 51 questionnaire responses were collected, however one was incomplete and therefore omitted from the data resulting in a total of 50 complete responses.

Data Analysis: The data was coded and entered into Microsoft Excel™ software for analysis. Descriptive statistical analysis was used to determine frequency distribution and demographic variables. A cross tabulation test was used to assess relationships between knowledge about OA and occupation background for participants.

Categorical data were summarised using frequency distributions to aid interpretation of yielded results. Analysis consisted of using frequency distributions for sample population and for each demographic characteristic (gender, age group, ethnicity and occupation).

RESULTS

Demographics: Out of the 50 participants included 33 (66%) femalesand 17 (34%) malescompleted the questionnaires.The age distribution of participants was: 22 – 30 (26%), 31 – 40 (16%), 41 – 50 (8%), 51 – 60 (2%), 61 – 70 (2%) and under 22 years (46%). The ethnicity of the participants was presented as: Asian/Asian British (A/AB) (32%), White/Caucasian (W/C) (28%), Black/African/Caribbean Black (B/A/C) (24%), others ethnic group (OEG) (12%) and mixed ethnic group (MEG) (4%). The occupation of the participants was: employed (20%), self – employed (2%), student (66%), employed and student (10%), self – employed and student (2%).

General understanding of OA: Overall, 60% (20% males and 40% females) of the participants indicated that they are aware of OA. The age distribution of the participants with knowledge about OA were; 22% for under 22 years of age group, 16% for 22 – 30 group and 10% for 31 – 40 group with 14% for people 41 years and over.There were 20% W/C, 16% of A/AB, 14% of B/A/C and 10% OEG knew about AO. Out of all participants, 44% students knew about OA in contrast to staff (16%). There were 86% (54% females and 32% of males) of all participants responded that patient experience stiffness of the involved joint in the morning or after immobility. As for age distribution, there were 8%, 12%, 26% and 40% (over 41, 31-40, 22-30 and under 22 years of age group respectively) patient indicated that experience stiffness of the involved joint in the morning or after immobility is the most common symptom.Additionally,32% (A/AB), 22% (W/C), 20% (B/A/C), 8% (OEG), 4% (MEG),62% of students and 24% of staff; agreed that stiffness of the involved joint upon arising in the morning or after immobility is a prominent symptom of OA.The term 'Generalised OA(three or more joints are involved)' was understood by (10%) males and (20%) females of the participants; 14% (22 – 30 age group) and 8% of participants under 22 years also understood theterm; where 10% W/C, 10% A/AS and B/A/C only understood the correct meaning of this term.Similarly, 18% of the students and 12% of staffknew what this term implies.

There were 42% of females and28% ofmales' participants agreed that excess body weight is a risk factor for developing OA (Figure 1). Majority of the participants under 22 (32%), 22 – 30 (18%) and 31 – 40 years (10%) responded that excess body weight predisposes one toOA. However, 26% W/C, 20% A/AB, 14% B/A/C and 8% OEG agreed that excess body weight increases the chance of developing OA. Additionally, 50% of students and 20% of staff selected the same option.

Knowledge about the treatment options for OA: Generally, there was an average level of understanding about treatments options for OA. Most of the participants (74%) indicated that knew braces could reduce OA pain. Also 74% were aware of surgery being done to treat severe forms of OA. However, 34% only indicated that heat or ice is best for relieving OA pain, 32% knew the role of a pain reliever in OA and 46% were aware of medicines used to treat OA.

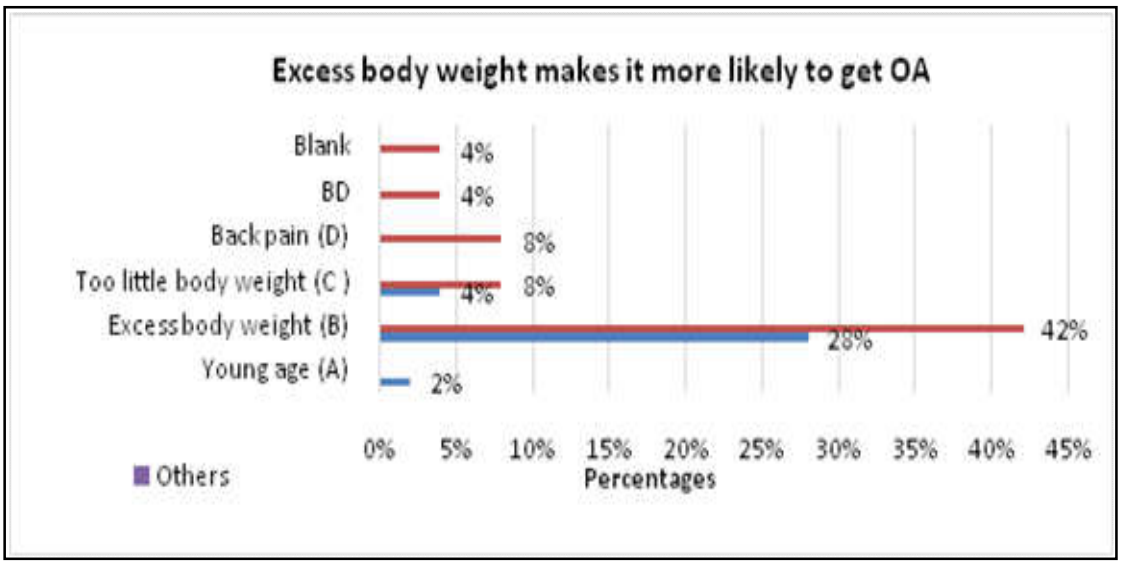

Figure 1. Participants gender response to which of these makes it more likely to get OA

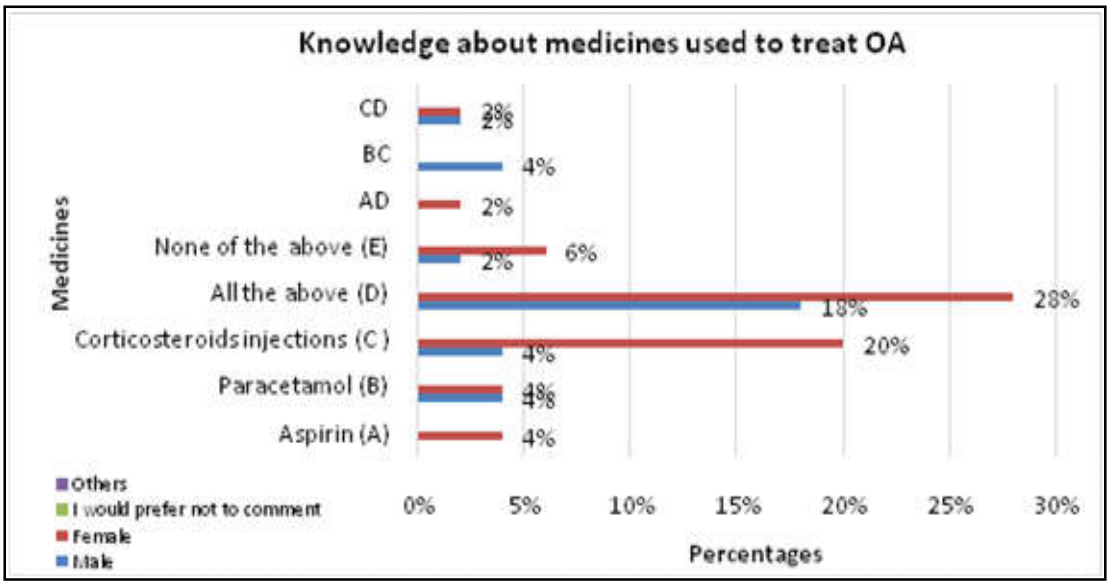

Figure 2. Participants gender knowledge about medicines used to treat OA

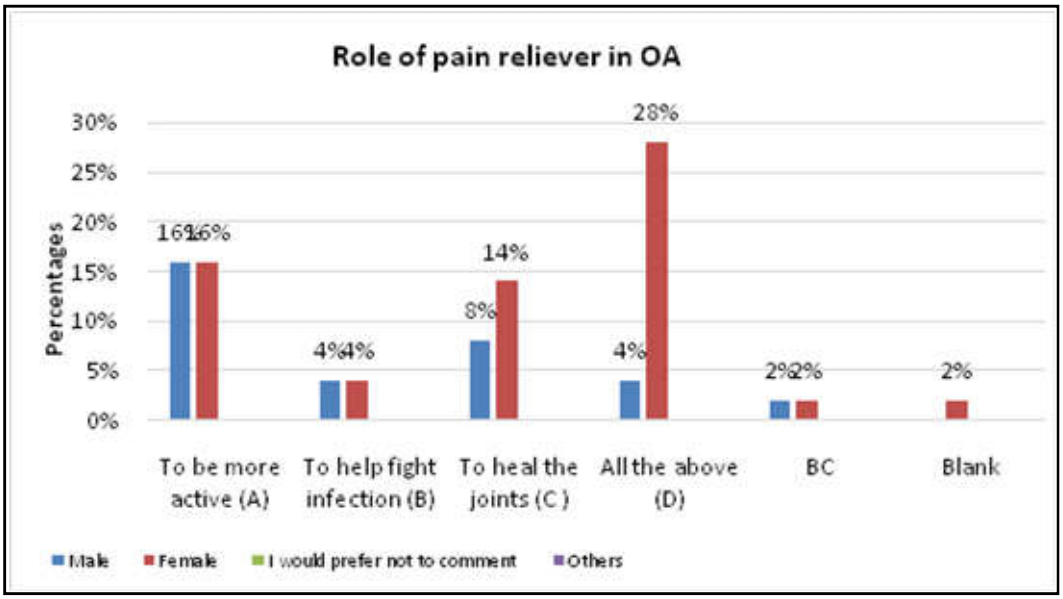

Figure 3. Participants gender response to role of pain reliever in OA

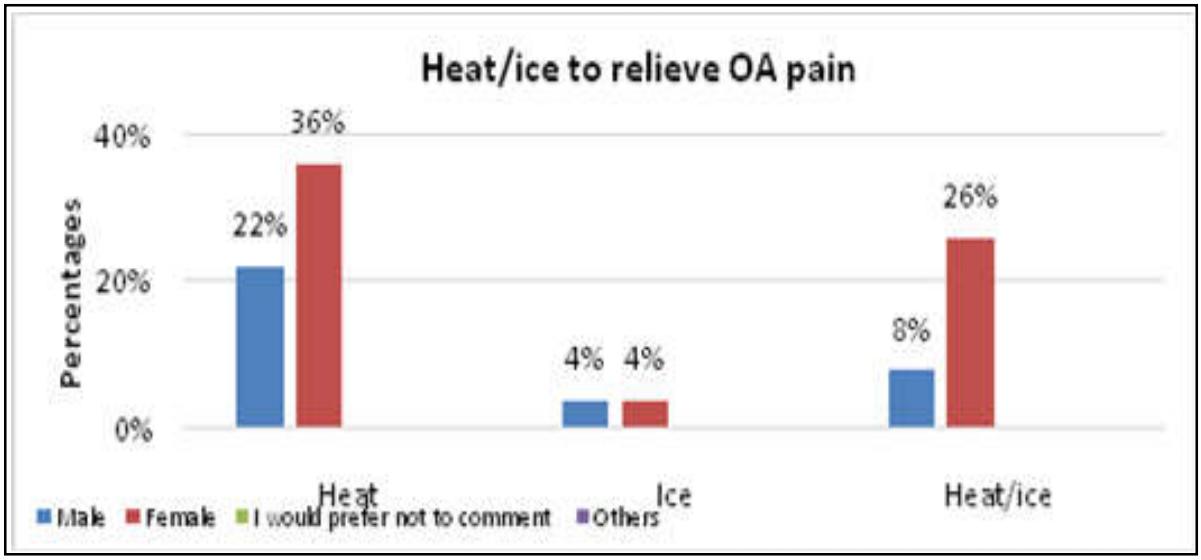

Figure 4. Participants gender response to heat/ice to relieve OA

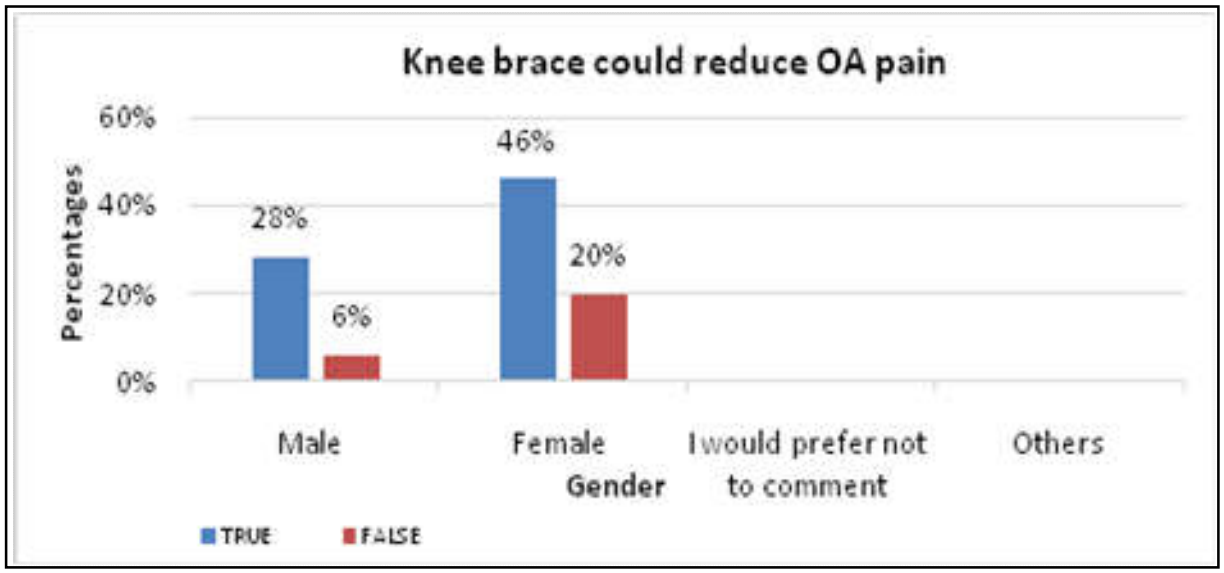

Figure 43. Participants gender response to knee brace could reduce OA pain

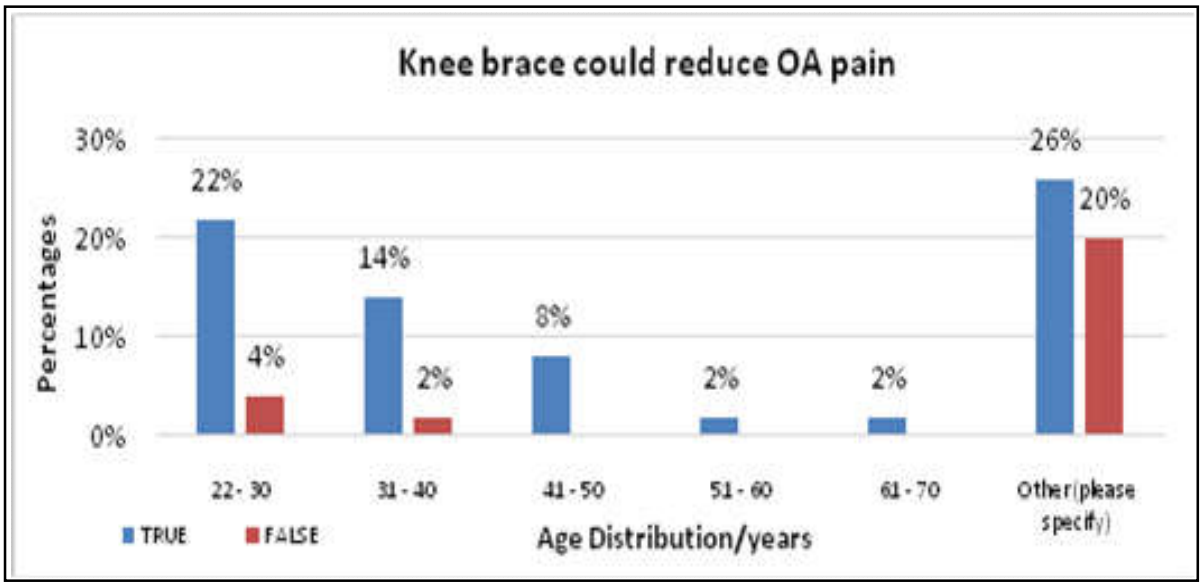

Figure 5. Participants age distribution response to knee brace could reduce OA pain

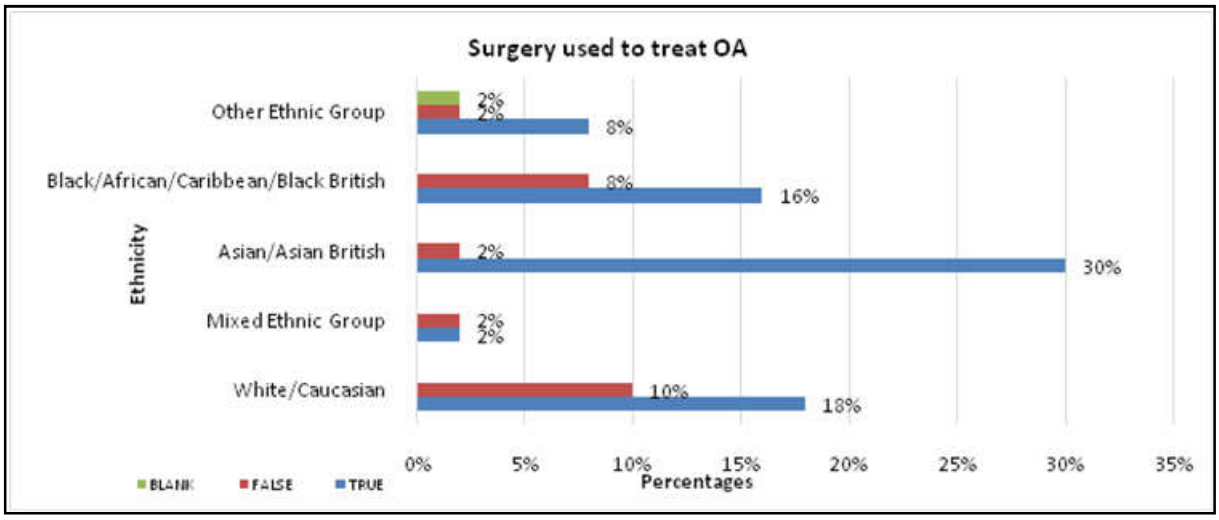

Figure 6. Participants ethnicity response to surgery used to treat OA

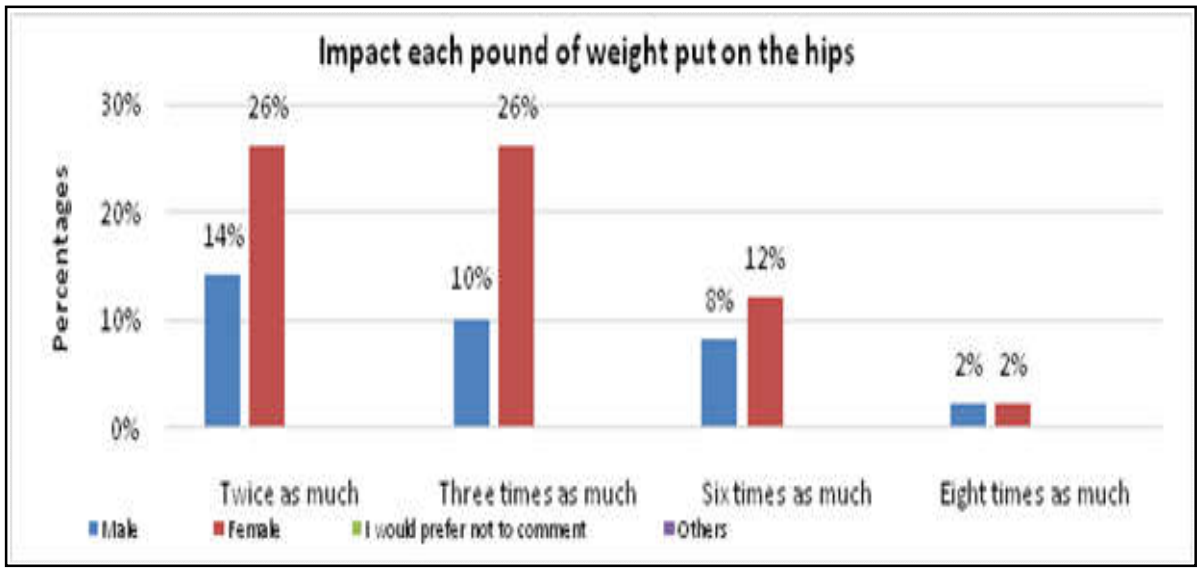

Figure 7. Participants gender response to impact each pound of weight put on the hips

There were more females (28%) than males (18%) knew about medicines used to treat OA (Figure 2). Out of all participants, the 22 – 30 age group (20%) and those under 22 years(14%) were the highest age groups with knowledge about medicines used to treat OA. Similarly, A/AB (16%), W/C (14%) and B/A/C (12%) were aware of the medicines used to treat. More students (30%) than staff (16%) were aware of medicines used to treat OA. A lower percentage of females (16%) and males (16%) knew that a pain reliever allows OApatients to be more active. This is displayed in figure 3.

When analysed by age group, participants pre - knowledge of a pain reliever role in OA with under 22 (12%), 22 – 30 (8%) and 31 – 40 years (6%) agreeing that it makes one more active.Among the participants W/C (14%) the highest agreed to pain reliever making OA sufferer more active, A/AB and OEG were equally at 6% where B/A/Cand MEG were lowest score (4% and 2% respectively).Among the participants, 22% of students and 10% of staff (10%) agreed that pain reliever makes an OA sufferer more active. A low percentage of males (8%) and females (26%) knew that heat or ice are best for relieving OA pain as revealed in figure 4.Out of all participants, those under 22 (16%) had the highest correct answer (heat or ice can be used to relieve OA pain) followed by 31 – 40 years (8%) and 22 – 30 years (6%) groups. Among the participants ethnicity, B/A/C and A/AB (12%) and W/C (10%) responded correctly all other ethnicities did not select this answer.More students (24%) than staff (10%) selected the correct answer (heat or ice is best to relieve OA pain). A high percentage of participants, females (46%) and males (28%) agreed that knee brace could reduce OA pain as displayed in figure 43.

Figure 5 shows the breakdown of participants' age distribution that responded that knee braces could reduce OA pain, the highest being the under 22 years group (26%).Among the participants ethnicity W/C (24%), B/A/C (22%) and A/AB (18%) aware that knee brace could reduce OA pain. More students (54%) than staff (20%) exhibited knowledge about use of knee brace could reduce OA pain. Majority of the participants, females (46%) and males (28%) confirmed that surgery can sometimes be done to treat OA.Figure 6 displays participants age distribution response to surgery sometimes used to treat OA and under 22 (32%) and 22 – 30 years (24%) already aware of it. Most participants of A/AB (30%)confirmed that surgery can sometimes be used to treat OA followed by

W/C (18%) and B/A/C (16%) groups.More students (60%) and staff (14%) agreed that surgery can sometimes be done to treat OA.

Adherence to treatment and reducing risks in OA: Generally, participants had a good understanding about lifestyle changes impacting on treatment and reducing risks in OA. Most participants (72%), knew that eating 'junk foods' such as hamburgers and French fries can worsen OA pain whiles (76%) were aware that fruit and vegetables such as oranges and grapefruits improve the condition. Also, the majority (76%) were well informed that a good night sleep can reduce ones OA pain and (64%) believed that physical exercise is vital in OA. However, only (20%) agreed that each pound weight exerts six times as much stress on the hips. Half of all females and 22% of males were aware that junk foods can worsen OA pain due to weight gain. A low percentage of females (12%) and males (8%) aware that each pound of weight put six times as much stress on the hips as illustrated in figure 7. Among the age groups, under 22 years (10%) recorded the highest score where all others age groups were under 10%. As for analysis by ethnicity, W/C (10%), A/AB (4%), B/A/C (4%) and OEG (2%) selected the correct answer and more students (16%) than staff (4%) were also aware of the weight effect on the joints. Most participants, females (50%) and males (26%) responded that eating oranges and grapefruits does not trigger OA pain.

Additionally, most participants under 22 (40%), 22 – 30 (16%) and 31 – 40 years (12%) selected the correct answer.The majority of participants selected the correct option (false) when they were asked if eating oranges and grapefruit can trigger OA (26%A/AB, 20% B/A/C, 20% W/C, 6% OEG and 4% MEG). Additionally, most students (60%) and staff (16%) selected the correct option as being false. Most participants' females (46%) and males (18%) disagreed that avoidingphysical exercise will improve their pain and fatigue. Majority of participants (28% of under 22, 14% of 22–30 and 12% of 31–40 years groups) (12%) agreed that physical exercise should continue regardless of experiencing pain and fatigue. Similarly, 24% of A/AB, 20% of W/C and 12% of B/A/C (12%) selected false as the correct option. There were more students (48%) than staff (16%) selected the correct option (false). More females (52%) than males (24%) responded that good night sleep can reduce OA pain.Most participants across the age groups and ethnicities agreed that good sleep can reduce OA pain (86% and 76% respectively).More students (58%) than staff (18%) selected the correct option (true).

Conclusion

OA is the commonest form of arthritis, affecting 8.75m people in the UK and the leading cause of pain and disability worldwide. There is no exact cause for OA, however there are knownrisk factors, including age, gender, obesity, joint injury, occupational exposure, joint abnormalities, genetic factors and smoking (Pharmacy Magazine, 2015). The sample was very diverse in demographics (gender, age, ethnicity and occupations), accordingly, all results were expressed in percentage out of each group. Participants had some general understanding about some symptoms of OA, terminology used to describe the condition and obesity being a risk factor in developing the condition. Also, participants had some knowledge about some non – pharmacological treatments used in OA and lifestyle changes to avoid or promote in reducing risk of developing OA.However,participants had little knowledge about which part of the joint is affected, some symptoms associated with OA, some non – pharmacological measures and medicines used in OA. Education, advice and access to information about OA are important. More programs about risk factors, lifestyle changes, causes and complications of OA should be implemented especially during national health awareness day to educate students and staff about the condition spearhead by pharmacy students. However only two participants expressed interest in learning more about OA and hence the need to run health campaigns on site. This will clear the myth that OA is simply a part of old age caused by simple wear and tear on the joints and help answer questions relating to factors that contribute to cartilage damage (Webb, 2013).

Such campaigns will enhance the knowledge of OA for healthcare students such as pharmacy, nursing and medical to better prepare them to identify the signs and symptoms leading to early diagnosis and manage OA patients. Both students and staff can pass on the knowledge to family and friends thereby increasing the awareness of OA. The qualitative data highlights the gaps in signs and symptoms and pharmacological treatments for OA and this can be addressed through optional training sessions. The study highlights the important role pharmacy plays in providing advice on non – pharmacological managements to people with OA to ease their symptoms and prevent the condition from worsening. Also, the study can serve as a platform to encourage healthcare students such as nursing, and pharmacy hold displays during national health awareness day to educate students and staff about other important health conditions and topics. The leaflet provides concise key-points knowledge in OA and signpost participants to areas to access additional information. It also highlights practical lifestyle changes participants can implement to reduce likelihood of developing or managing OA.According to the results of a Canadian study (2012), community pharmacists can identify patients with previously undiagnosed OA of the knee and play a crucial role in improving patient quality of care as part of a multidisciplinary team from the community (Marra et al., 2012)

Limitations

Since only 50 participants were involved in this study, males participants' number was considerably lower than females and most of the participants were students not staff, accordingly the results were not a true reflection of the general understanding, knowledge about treatment options and adherence and reducing risks in OA amongst students and staff of the university.

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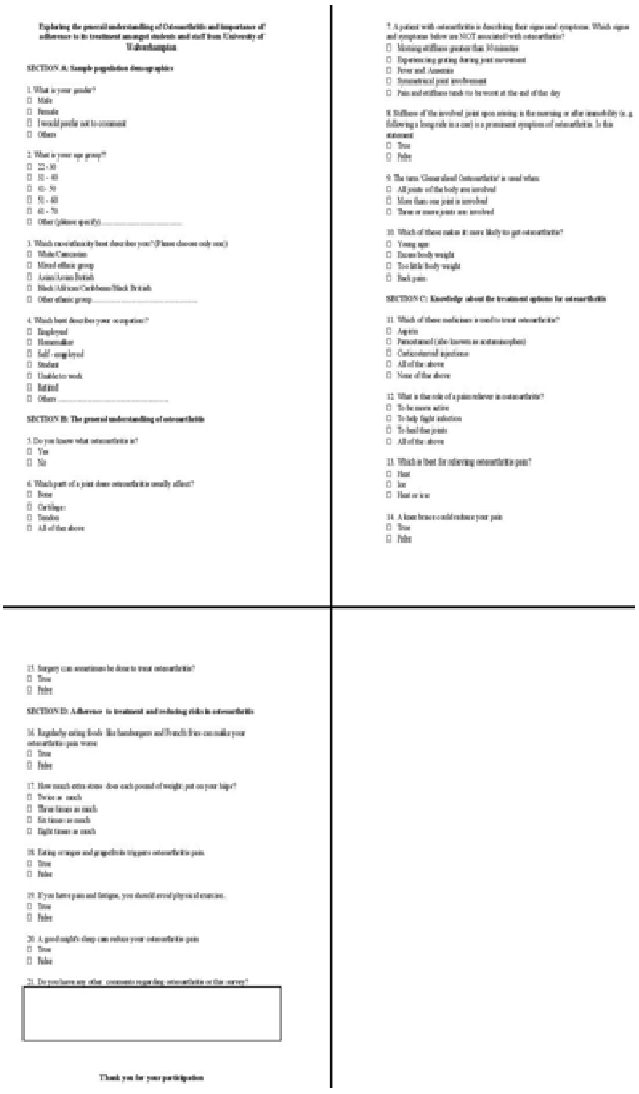

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