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KNOWLEDGE OF PAIN ASSESSMENT AND MANAGEMENT AMONG ORTHOPEDIC PHYSICIANS AT WESTERN REGION, SAUDI ARABIA

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Abstract

Aim: *The present study aimed at exploring the level of knowledge of pain assessment and management among orthopedic physicians at western region hospitals in Saudi Arabia, Saudi Arabia. In addition, the present study sought to identify any significant statistical differences in orthopedic physicians' knowledge of pain assessment and management referred to their gender and/or years of experience.*

Method: *This was a cross-sectional study that was conducted between March and May 2021. A convenient sample of 186 orthopedic physicians were recruited from four tertiary public hospitals from the western region of Saudi Arabia (King Fahad Hospital in Albaha city, Alnoor specialist hospital in Mecca city, and King Abdul-Aziz Medical City in Jeddah city. The study adopted a modified version of pain assessment and management knowledge questionnaire developed by Ferrell & McCaffery (2000) that consisted of 15 items.*

Results: *The results of the study showed that orthopedic physicians at western region public hospitals had sufficient knowledge regarding basic pain assessment and management aspects, such as adjustment of opioids doses based on patient's response (90.9%), usual duration of morphine analgesia (89.8%), patients' sleep despite of severe pain (83.9%), and reliance on parents' assessment of pain if the patient is a child under 11 years old (80.1%). However, there was a lack of knowledge regarding effectiveness of Aspirin and NSAIDS in bone metastasis cases (47.8%), pain sensitivity and experience among pediatrics (43.5%), using of opioids in patients having substance abuse history (40.3%), and tolerance of elderly patients to opioids (22%). Moreover, the study showed that there was significant association of both gender and years of experience to the orthopedic physicians' level of knowledge of pain assessment and management.*

Conclusion: *The study concluded that orthopedic physicians have adequate level of knowledge about pain assessment and management with regard to the basic pain assessment and management parameters. However, there is a significant lack of knowledge regarding the use of opioids and advanced tolerance and sensitivity of both pediatric and elderly patients when assessing and managing pain. The study recommends increasing the orthopedic physicians' knowledge and practice regarding pain assessment and management through conducting more educational and training sessions.*

Keywords: *orthopedic, pain assessment, pain management, knowledge, western region.*

Introduction

Pain has been described as " An unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage" [*Raja SN et al., 2020*]. Although that sounds rather complex, what is really saying is that pain is more than a physical experience [*Tsai IP et al., 2018*]. It involves emotions, thinking processes, the way of feeling, and it may have a real tissue damage origination or sometimes not. Sometimes it is very difficult to find the cause of pain and it doesn't mean that pain isn't occur-

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ring just because there is no actual trauma or damage identified [*Fallon M et al., 2018*].

Assessing pain can be a very complex process, but the more we structure it and think through it in advance, we can assist patients in coming to an effective diagnosis and differential therapeutic approach and give them the confidence that we understand what they are experiencing, the extent of it, the extent of the complications [*Arendt-Nielsen L et al., 2018*].

Each and every person that physicians are treating should be offered an adequate assessment of pain [*Van Boekel RL et al., 2017*]. That will always include documentation of some of the very basic aspects of pain; the pain's location, its intensity, and what are the qualities of the pain, when did the pain begin, how long has it lasted, does it last in variations, in discrete episodes or is it chronic, does it have rhythm at different times, and in different intensities, how is it that the pain is expressed, what are the thing that can make the pain better, what is it that the patient does that they do to relieve the pain, what are the things they might do whether through movement or action that might worsen the pain, and what have been the functional effects of the pain [*Samarkandi OA, 2018*]. So, a patient-centered multifactorial and comprehensive care plan can then be developed with the patient, with the patient's active engagement and this should include bio-psychosocial factors and spiritual and cultural factors given some of these basic elements [*Mallick-Searle T et al., 2021*].

It would be important for the physician to have structured questions that would further examine the range of issues. So for example, if this is someone who has been experiencing pain for an extended period, what's been the response to previous treatments, what were those treatments and to what aspects of the pain were they successful or not, what was the meaning of the pain to them and the likely causes of the pain [*Zielinski J et al., 2020*], it's also really critical to assess patient health status overall because clearly someone who is dealing with other chronic illnesses will be less able to cope with a pain than with someone who might otherwise be in robust health. So, that leads to a general medical history [*Pölkki T et al., 2018*].

Additionally, it's really important to assess for any co-occurring comorbid psychiatric illnesses, what were their prior and certainly current medications, which would include both over-the-counter and any alternative medications that patients might be choosing for themselves [*Amponsah AK et al., 2019*]. It's also important to look at the family and social history as it may have relevance to the context of the pain [*Fitzgerald S et al., 2017*].

When examining the patient for pain-related problems, clearly if there are localized areas that it might be due to weather, it might be localized to the back, to an arm, or to another injury specific area, it's important to check for muscle stretch and muscle stretch reflex changes [*Tagliaferri Aet al., 2018*], whether hyper or hypo in response over time and it's important to look at key sensory features as would be typical in a neurologic exam or orthopedic exam looking for allodynia from myofascial trigger points looking for patterns of referred pain as well as for weak or inhibited muscles [*Rolin-Gilman C et al., 2017*].

In addition, it is significant to characterize the pain into at least broad types of pain [*Amris K et al., 2019*]. The initial primary nociceptive pain would typically described as sore, throbbing, dull, tender, aching, cramping or other words that would be typically associated with such conditions [*Fitzgerald S et al., 2017*]. Pain more associated with damage to the nerves themselves may be in the concept of neuropathic pain, described as hot, burning, electrical shocks, stabbing pain or painful cold, tingling, prickling, even a numbness. So, other words such as these would describe pain that may be associated with some ongoing irritation or actual damage to the nerves themselves [*Samarkandi OA, 2018*]. Then, there can be sensory hypersensitivity, which can be presented for man of our patients as a widespread fatigue, non-restorative sleeping, cognitive dysfunction, significant mood disturbances, hypersensitivity to sensations such as light, sound or smell. So, helping to characterize these will also help in the differential as we are working to frame that [*Ford C, 2019*].

To overcome it is possible, due to the uniting the knowledge and will of all doctors in the world

Despite the availability of valid and reliable pain assessment measures, several studies pointed to the lack of knowledge and practice among healthcare provides, specially physicians, in assessing and managing pain among adult patients. For example, Al-Quliti KW, Al-Amri MS (2015) reported that Saudi healthcare providers in Al-Madinah Al-munawwarah had a significant insufficient knowledge and practice regarding pain assessment and management. In addition, *Fallatah SM (2020)* indicated that both knowledge and attitudes towards pain assessment and management among Saudi healthcare providers were insufficient and unsatisfactory. Therefore, there is an urgent need to investigate the level of knowledge regarding pain assessment and management among Saudi healthcare providers. Based on this urgent need, the present study aims at assessing the level of knowledge of pain assessment and management among orthopedic physicians in the public hospitals of the western region, Saudi Arabia.

Research questions:

The present study sought to answer the following research questions

What is the level of knowledge of pain assessment and management among Saudi orthopedic physicians in the public hospitals of western region, Saudi Arabia?

Are there any significant statistical difference in the orthopedic physicians' knowledge of pain assessment and management referred to their gender or years of experience?

Literature Review;

Different theoretical and empirical studies assessed the level of knowledge of healthcare providers about pain assessment and management. For example, Fallatah SM (2020) performed a cross-sectional study to assess the level of knowledge and attitudes of Saudi healthcare professionals of pain assessment and management. The sample of the study consisted of 346 healthcare professionals who were asked kindly to fill a self-administered questionnaire consisted of 30 items. The results of the study indicated that there is a significant lack of knowledge and insufficient attitudes towards pain assessment and management among the investigated sample of the healthcare professionals.

Al-Quliti KW & Al-Amri MS (2015) carried out an exploratory study that aimed at assessing the knowledge and attitudes of Saudi healthcare providers of pain assessment and knowledge. The sample of the study consisted of 100 healthcare providers from Al-Madinah Al-Munawwarah healthcare facilities. The results of the study revealed that there is insufficient knowledge of pain assessment and management among the study participants. In addition, it was reported that there is unsatisfactory level of positive attitudes towards pain assessment and management among the Saudi healthcare providers in the explored health settings.

Shdaifat E and co-authors (2020) performed an assessment of the nursing students' knowledge of pain assessment and management in Saudi Arabia. The study adopted the quantitative approach through conducting a cross-sectional survey over a convenient study sample of 193 nursing students from different Saudi universities. The researchers developed a study questionnaire to elicit data from the study participants. The results of the study showed that there is a low level of knowledge of pain assessment and management among the nursing students in Saudi universities. In addition, the results of the study indicated that gender was significantly associated with the students' knowledge of pain assessment and management.

Kaki AM (2011) conducted a study that aimed at assessing the level of medical students' knowledge regarding cancer pain management. The study was a cross-sectional research approach that was administered over a study sample consisting of 325 medical students from different Saudi universities. The researchers used a self-filled questionnaire that examined the participants' knowledge regarding cancer pain management. The findings of the study revealed that there is a poor level of knowledge of cancer pain management among Saudi medical students.

Significance of the study:

The present study is significant as it explores a crucial issue that is related to providing a high quality of healthcare services. The appropriate assessment and management of pain significantly improves the diagnostic and therapeutic procedures adopted with patients in healthcare facilities. In addition, assessing the level of knowledge of pain assessment and management might help the

health promotion specialists to design tailored educational and interventional procedures that aim to improve the healthcare providers' knowledge and practice of pain assessment and management.

Moreover, the results of the study might form a nucleus for other research studies examining the knowledge, attitudes, perceptions and experiences of Saudi healthcare providers related to pain assessment and management. Finally, the findings of this study significantly improves the knowledge and understanding of the deficiency aspects in the field of pain assessment and management, which enable the health policy makers to implement different improvement projects to strengthen these aspects.

Material and Methods

Participants and setting

The current study was performed at orthopedic clinics affiliated to the orthopedic departments of King Fahad Hospital (KFH) at Albaha city, King Abdul-Aziz Medical City in Jeddah city, and Alnoor specialist hospital in Mecca city, Saudi Arabia, which are large tertiary hospitals in Saudi Arabia. These hospitals provides both academic and healthcare services for Saudi and non-Saudi population. The hospitals serve a large population including those having health insurance through the Saudi Ministry of Health, university staff and students, in addition to individuals having a valid health insurance from various private companies. The hospitals were established to provide the healthcare services for people living in the main cities of the western region of Saudi Arabia and the rural areas within the administrative authorities of Albaha, Mecca and Jeddah cities. The orthopedic clinics in these tertiary hospitals are outpatient clinics providing healthcare services for patients of all age groups attending either for regular checkups or with acute or chronic complaints.

A total of 186 physicians and residents participated in the present study. The sample was selected conveniently with a margin of error of 5%, a confidence interval of 95% and a significance level of 0.05. The participants were recruited from King Fahad Hospital, King Abdul-Aziz Medical City, and Alnoor specialist hospital between February 2021 and April 2021. The participants were assessed in term of meeting the inclusion criteria, and then they were kindly asked to fill in the study questionnaire. The inclusion criteria were being a physician or a resident physician, working the medical profession at the orthopedic clinic, having at least six months of professional experience, able to read and write either Arabic or English (or both), and accepted to be recruited in the study. Exclusion criteria included participants did not meet at least one of the previously stated inclusion criteria.

Data collection tool

The data collection tool in the present study was a pain assessment and management knowledge questionnaire developed by McCaffery M & Ferrell BR (2000), which was modified by the researcher and included 15 items scaled as Agree, neutral and disagree. Each items has two choices, True (1) and False (2). The questionnaire included a first part designed to elicit the participants' demographic characteristics (Gender, years of experience and marital status).

This cross-sectional study adopted the questionnaire as a data collection tool. The study questionnaire consisted of three parts. The first part was designed to elicit data about the participants' sociodemographic and clinical characteristics, such as age, husband's age, marital status, educational level, type of job, nationality, number of boys, number of girls, age of youngest child, own residency, years of marriage, presence of other wives, income, smoking, last baby gender and age, gender satisfaction, desire to get pregnant again, pregnancy type and duration, having any diseases or complications either during pregnancy or delivery, type of feeding and sleep location of the baby.

The questionnaire was ensured for validity through submitting to a number of experts and pain assessment and management specialists in Saudi universities. To ensure the reliability of the study questionnaire, the researchers conducted a pilot study that included 25 orthopedic physicians who were asked kindly to answer the questionnaire items. Cronbach's Alpha equation was used to assess the reliability of the questionnaire based on the responses of the pilot study sample. The reliability coefficient was 0.81, which indicated an acceptable reliability score for the study questionnaire. An English version of the questionnaire was distributed over the study participants. The ques-

tionnaire package included a consent form to be signed by the participants before getting access to the original study questionnaire. The researcher introduced the participants to the aim and the significance of the stud and guided them on how to fill in and answer the questionnaire items.

Data analysis

The Statistical Package of Social Sciences (SPSS) (IBM Corporation v.26) was adopted to process the participants' answers. The descriptive statistics were used to analyze the participants' sociodemographic and clinical characteristics. In addition, regression analysis was used to investigate the association between knowledge score about pain assessment and management and the participants sociodemographic characteristics. A *P* value <0.05 was considered statistically significant.

RESULTS

The present study aimed at assessing the level of orthopedic physicians' knowledge of pain assessment and management through exploring the responses of a conveniently selected sample of orthopedic physicians (n=186) from King Fahad Hospital. The results shown in table (1) represent the sociodemographic characteristics of the study participants. The results showed that male orthopedic physicians constituted 55.9% (n=104) of the study participants, whereas female orthopedic physicians were 44.1% (n=82). Distributing the study participants based on their years of experience revealed that orthopedic physicians who had 5 to 10 years of experience were the most represented categories, as they constituted 42% (n=78), followed by those who had more than 10 years of experience (36%, n=67). The least represented category were the orthopedic physicians who had less than 5 years of experience, which constituted 22% (n=21). In addition, married orthopedic physicians were the highest represented category of the participants, they were 86.5% (n=161), whereas widowed or divorced participants constituted 7.5% (n=14). The least represented category of the orthopedic physicians based on their marital status were those who were single, as they were representing 6% (n=11) of the total study sample.

TABLE 1

Sociodemographic characteristics of the study participants

Variable	n (%)
Gender	
Male	104 (55.9%)
Female	82 (44.1%)
Years of Experience	
Less than 5 years	41 (22%)
5 – 10 years of experience	78 (42%)
More than 10 years	67 (36%)

The results shown in table (2) represent the participating physicians' knowledge scores on the pain assessment and management scale. the results showed that the correct responses of the study participants ranged between 22% and 90.9%. the highest correctly answered items were those related to adjusting opioid doses based on the patient's responses (90.9%), the normal duration of morphine analgesia (89.8%), patient's susceptibility to fall asleep despite of suffering from severe pain (83.9%), the reliance on parents' pain assessment in case the patient is a child younger than eleven years old (80.1%). On the other hand, the least correctly answered items were those related to the effectiveness of aspirin ad NSAIDS in alleviating bone metastasis pain (47.8%), the pain sensitivity of children less than two years old (43.5%), using opioids with patients having substance abuse disorder (40.3%), and tolerance to pain relief among elderly patients (22%).

The results shown in table (3) represent the Chi-Square analysis of the participants' responses to the questionnaire items based on their demographic characteristics. The results indicated that there is a significant statistical difference in the participants' knowledge regarding pain assessment and management due to their gender and years of experience. A chi-square analysis of independence revealed that there was significant association between gender and knowledge of pain assessment and management, X^2 (1,N=186)=336.043, P<0.05. In addition, it was found that years of experience is associated with physicians' knowledge of pain assessment and

TABLE 2.

Means and standard deviations of physicians' knowledge scores on the pain assessment and management knowledge scale

Item	Correct answers n (%)	Rank
"Vital signs are always reliable indicators of the intensity of a patient's pain" (F).	141 (75.8%)	5
"Because their nervous system is underdeveloped, children under two years of age have decreased pain sensitivity and limited memory of painful experiences" (F)	81 (43.5%)	13
"Patients who can be distracted from pain usually do not have severe pain" (F)	126 (67.7%)	7
"Patients may sleep in spite of severe pain" (T)	156 (83.9%)	3
"Aspirin and other nonsteroidal anti-inflammatory agents are NOT effective analgesics for painful bone metastases" (F)	89 (47.8%)	12
"Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months" (T)	101 (54.3%)	9
"Combining analgesics that work by different mechanisms (e.g., combining an NSAID with an opioid) may result in better pain control with fewer side effects than using a single analgesic agent" (T)	138 (74.2%)	6
"The usual duration of analgesia of 1-2 mg morphine IV is 4-5 hours" (F)	167 (89.8%)	2
"Opioids should not be used in patients with a history of substance abuse" (F).	75 (40.3%)	14
"Elderly patients cannot tolerate opioids for pain relief" (F)	41 (22%)	15
"Patients should be encouraged to endure as much pain as possible before using an opioid" (F)	96 (51.6%)	11
"Children less than 11 years old cannot reliably report pain so clinicians should rely solely on the parent's assessment of the child's pain intensity" (F)	149 (80.1%)	4
"Patients' spiritual beliefs may lead them to think pain and suffering are necessary" (T)	113 (60.7%)	8
"After an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient's response" (T)	169 (90.9%)	1
"Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real" (F).	98 (52.7%)	10

management, X^2 (1,N=186)=125.587, P<0.05.

DISCUSSION

The present study aimed at exploring the level of orthopedic physicians knowledge about pain assessment and management. The results of the study showed that orthopedic physicians were having sufficient knowledge regarding pain assessment and management in the aspects related to opioid doses adjustment based on patient's responses, the duration of morphine analgesia, patients' susceptibility to sleep in case they are suffering of severe

TABLE 3.

Chi square analysis of the association between physician's knowledge of pain assessment and management and gender and years of experience variables.

Variable	Actual values (Expected values)	Chi square values	df	Chi-square	P-value
Gender					
Male	740 (972.903)	55.7547	1	336.043	< .05
Female	1000 (767.097)	70.7133			
Years of Experience					
Less than 5 years	480 (383.55)	24.25	1	125.587	< .05
5 – 10 years of experience	604 (729.68)	21.65			
More than 10 years	656 (626.77)	1.36			

pain, the reliance on parents' pain assessment when the patient is a child under 11 years old, non-reliance on vital signs as an indicator of the pain intensity, and the effectiveness of combinational analgesics therapy to alleviate pain. These results might be attributed to that those aspects are within the normally and continuously practiced aspects in the investigated settings. In addition, these results might be referred to the continuous educational and training sessions held to educate physicians in tertiary hospitals in Saudi Arabia about pain assessment and management. These results are consistent with the findings reported by Alkhatib GS and co-authors (2019), which indicated that healthcare workers (nurses and physicians) have good knowledge about the adjustment of opioid doses based on patient's response and the reliance on parents' assessment of pain when examining a child under age of 11 years.

On the other hand, the results indicated that there was insufficient knowledge level of pain assessment and management among the orthopedic physicians regarding the effectiveness of Aspirin and NSAID in alleviating the pain resulted from bone metastasis, sensitivity of pain among children younger than two years old, using opioids for patients having a previous history of substance abuse, tolerance of elderly patients for opioids use to alleviate pain severity and intensity. These results might be attributed to the lack of courses and educational sessions related to use of opioids, NSAIDS and other pain relieving drugs used to alleviate pain among different categories of patients. This would indicate a shortage in the educational content provided for the physicians regarding pain assessment and management, especially in the field of substance abuse and the effect of pain relieving drugs on tolerance, sensitivity and its relation to patient's age. These results are consistent to some extent with the findings reported by Nuseir K and co-authors (2016) who reported that Jordanian healthcare workers have insufficient knowledge regarding assessing and managing pain among children and the sensitivity and tolerance of both children and elderly patients to pain-alleviating drugs.

Discussing the results through referring to the comprehensive assessment focusing on five parameters, which are "Pain, functional and social, mental health, substance abuse and opioid risk assessment, and physical examination", reveals that orthopedic physicians are lacking knowledge in the last three parameters. It is obvious that orthopedic physicians have the basic knowledge related to pain assessment and management, but they are lacking of advanced pain assessment and management knowledge, especially those related to assessing the risks of opioid risk assessment.

Furthermore, the results of the study showed that there was a significant association between the physicians' gender and years of experience on one hand and the level of knowledge about pain assessment and management on the other hand. These results might be attributed to the higher representation of males in the study sample and to that higher years of experience provides the physicians with more practical experience regarding pain assessment and management.

Conclusion

To conclude, the present study found that orthopedic physicians at King Fahad Hospital, King Abdul-Aziz Medical City, and Alnoor specialist hospital have sufficient level of knowledge about basic parameters of pain assessment and management. However, still there is a deficiency in their knowledge about advanced pain assessment and management, especially the aspects related to use of opioids and substance abuse when assessing and managing pain. The present study recommends conducting more educational and training sessions about pain assessment and management to increase physicians' knowledge and practice of the basic and advanced principles of pain assessment and management. In addition, the present study recommends conducting further studies to explore the healthcare workers' knowledge, attitudes, perceptions, beliefs and practices of pain assessment and management.

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