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EXPLORING FACTORS AMONG HEALTHCARE PROFESSIONALS THAT INHIBIT EFFECTIVE PAIN MANAGEMENT IN CANCER PATIENTS

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Abstract

Aim: The aim of this study was to investigate differences in the barriers to good cancer pain management between physicians, nurses, and pharmacists in Jordan. *Design:* A descriptive correlational design was used to answer the research questions of this study. *Methods:* A group of 473 participants completed the study questionnaires (Barriers Questionnaire – II and Nurses' Knowledge and Attitudes Survey). *Results:* Fears related to analgesic use, fears related to opioid side effects, communication, cultural beliefs, and lack of knowledge were the most clearly identified barriers to cancer pain management. Cancer pain management has not previously been an area of interest for the Jordanian health authorities. *Conclusion:* The information that emerged from this study helps to identify the current barriers and misconceptions among health professionals that prevent effective pain management for cancer patients. To maximize the role of health professionals in this area, health administrators need to provide them with more specialized training and empowerment.

Keywords: cancer pain, healthcare professionals, Jordan, pain management.

Introduction

Today, the incidence of cancer is increasing, and it has become the second leading cause of death worldwide; it is responsible for one in every seven deaths. In 2012, approximately 14.1 million cases of cancer were diagnosed around the world, and 8.2 million cancer deaths were reported, with more than half (60%) in low- and middle-income countries which lack the medical resources and health systems to support the disease burden (American Cancer Society, 2016). Furthermore, the global cancer burden is increasing at a distressing rate; in 2030 alone, around 21.7 million new cancer cases, and 13.0 million cancer deaths are expected to occur due to the growth and aging of the population (American Cancer Society, 2016). The incidence of cancer in Jordan is estimated at more than 3,500 new cases every year. Of the 12,066 reported deaths in 2005, 1,555 cancer deaths were likely to have required palliative care and pain relief, including opioid analgesics (Jordan Cancer Registry, 2015; Freij et al., 2018). The majority of cancer patients in Jordan require pain relief, which is only available in the referral hospitals. Appropriate pain management can lead to earlier clinical recovery, shorter hospital stays, and better quality of life (Al Khalaileh, Qadire, 2012; Yazdani, Abdi, 2014).

Cancer pain involves "inflammatory, neuropathic, ischemic and compression mechanisms at multiple sites" (Raphael et al., 2010). Cancer pain is defined as "pain that is experienced by adults and children with cancer in which the pain is due to the tumor itself, to cancer therapy, or associated problems" (Raphael et al., 2010; Batiha et al., 2015). Cancer pain management is still unsatisfactory, and this is mainly related to poor pain assessment (Stewart, 2014; Omran et al., 2015). It negatively impacts on patients' quality of life (American Cancer Society, 2016; Abu-Saad Huijer et al., 2012).

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Cancer pain management is a challenge in spite of international guidelines and the availability of various potentially effective analgesics. The literature published on this topic indicates that the prevalence of cancer pain has decreased; however, approximately 33% of patients still do not receive pain medication relative to the intensity of their pain (Batiha, 2014; Greco et al., 2014; Alhalaiqa et al., 2015). This indicates that the problem of cancer-related pain has not yet been successfully tackled. This reflects a potential shortage in the knowledge, attitude, and practices of health professionals. These issues have rarely been investigated in Jordan.

A Jordanian study found that the prevalence of cancer pain was high (73%), and that approximately a third (31%) of patients had not been treated for their pain (Al Qadire, Tubaishat, Aljezawi, 2016; Albashtawy et al., 2016). As a result, interventions were made, including an education program for nurses to improve their knowledge and attitudes (Abdalrahim et al., 2011; Al Qadire, Al Khalaileh, 2014). However, none of these studies investigated barriers to good cancer pain management of all types, and none involved other healthcare professionals. The overall aim of our study was to investigate differences in the barriers to good cancer pain management between physicians, nurses and pharmacists in Jordan.

Theoretical Framework

The theoretical framework adopted in this study was based on the Symptom Management Model (SMM) (Dodd et al., 2001). It is a multidimensional model, embedded within the three main nursing domains: person, environment, and health. This model devotes attention to a variety of factors that affect symptom management, and in doing so also targets potential barriers to the effective relief of cancer pain. The model consists of three circles that interact with each other and influence pain management. The first circle is symptom experience (input), the second is the component of symptom management strategies (process), and the third is symptom status (outcomes). The three dimensions are interrelated and therefore these dimensions should be considered collectively in order to achieve successful symptom management (Dodd et al., 2001).

The components of the SMM are influenced by the nursing science domains. Nevertheless, this does not prevent its use by other health professionals. In most cases, symptom management needs an interdisciplinary team including a patient, nurse, physician, social worker, pharmacist, and others (Miles et al., 2003; Voss, 2005). Such a team could use the SMM within a physical environment to build a patient-family-clinician relationship, to complement efforts to encourage and assist different partners in successfully preventing or managing symptoms. Therefore, the application of this model is not the work of an individual, and not limited to a particular profession, due to the multidimensional nature of the model and complexity of the symptoms (Dodd et al., 2001).

This theoretical framework is a bi-directional relationship model, linking the person domain to the concepts of pain experience and pain management strategies. This relationship occurs within a specific physical, social and cultural environment. It also has a significant effect on the notion of adherence or non-adherence to pain management strategies, and thus it influences the outcomes (Miller et al., 1997).

Aim

The aim of our study was to investigate differences in the barriers to good cancer pain management between physicians, nurses and pharmacists in Jordan.

Methods

Design

A descriptive correlational design was used in this study.

Sample

In total, 850 Jordanian clinicians were recruited, including physicians, nurses, and pharmacists, from various Jordanian healthcare sectors, who met the following inclusion criteria: a) able to articulate their experiences of the phenomenon being studied; b) with at least six month's experience of working with adult cancer patients.

There are no fixed rules for calculating sample size (De Vellis, 2003). Calculation methods used to estimate sample size depend on the type of study (Babbie, 2004), and the number of items in the survey (De Vellis, 2003). The greater the number of scale items, and the greater the number of factors anticipated, the greater the number of subjects that should be included in the analysis. The sample size for this study was calculated based on the need for a sufficiently large sample to support a standard factor analysis. If the number of subjects for the factor analysis is too small, the results will not yield a good solution for the sample data. Ideally, a ratio of ten subjects to each item (for 27 items and + 37 items) is recommended for a standard factor analysis

(Field, 2005). As a multi-center study, and convenience sample technique were adopted, 850 different clinicians were initially recruited. Given this information, the ratio of subjects to variables was calculated based on the response rate, and was optimal for conducting factor analysis. A probability value of 0.05 on a two-tailed test was accepted as the level of statistical significance. The estimated effect size was a medium effect size of 0.15 and a statistical power is 0.80.

Data collection

Three instruments were used to collect the required data from clinicians: a) a demographic data sheet, including age, gender, marital status, income, employment status, education, job title, total years of experience, total experience in oncological care, personal experience of pain, and pain management education; b) the Barriers Questionnaire (BQ-II), and c) the Nurses' Knowledge and Attitudes Survey regarding pain (NKAS). As English is the official language of teaching for all healthcare professions, there was no need to translate the instruments of the current study.

The second version of the BQ-II was developed by Gunnarsdottir, Serlin and Ward (2005). It contains 27 items to measure attitudes toward using analgesics that can act as barriers to achieving effective pain control. The barriers identified were: a) the physiological effect (12 items); b) communication (six items); c) fatalism (three items); and d) harmful effects (six items). Participants rate the extent to which they agree with each item on a six-point Likert-type scale, anchored with 0 ("do not agree at all") and 5 ("agree very much"). Mean scores for the total BQ-II, as well as for its subscales, are generally used in analysis.

Regarding the validity and reliability of the questionnaire, the BQ in its original and second version (BQ-II) has been translated into different languages, including Chinese, Spanish, and Icelandic. The BQ-II has been shown to be a reliable and valid instrument to measure patient, family caregiver, and clinician related barriers to pain management in a number of studies (Gunnarsdottir, Serlin, Ward, 2005). Based on the findings from Gunnarsdottir, Serlin, Ward (2005), there is initial evidence of both the reliability and validity of the BQ-II. The total scale has very good internal consistency, with an alpha of 0.90, and alpha for the three factors ranging from 0.77–0.91. In addition, evidence of the validity of the BQII is provided by the findings of factor analysis, and the relationships between barrier scores, pain, and background variables.

The Nurses' Knowledge and Attitudes Survey regarding pain (NKAS), used to examine professionals' knowledge regarding cancer pain relief was a modified version of the NKAS (McCaffery, Ferrel, 1997). The NKAS instrument is a self-administered 37-item survey, including 22 true/false questions, 13 multiple-choice questions, and two case studies with two questions each, yielding a total of 39 questions. The NKAS was used in this study to explore the relationships between overall knowledge and total barrier scores, education, income, and years of experience.

The NKAS questionnaire has been used in Jordan before in its original language, demonstrating good validity (Sabri, 2002). In Sabri's study, the NKAS survey was revised and tested during a pain education course with more than 800 subjects. Construct validity was established by comparing scores of nurses at various levels of expertise, such as students, new graduates, oncology nurses, graduate students, and senior pain experts. Content validity was established by review by a panel of experts. Test-retest was established (r = 0.80) by repeat testing of 60 nurses in further education classes. Internal consistency and reliability of the tool was established using Cronbach's alpha (alpha r = 0.70), with items reflecting both knowledge and attitude domains.

The NKAS or adapted versions of it have been used extensively with different clinicians, including nurses, physicians, and pharmacists. For instance, Wells et al. (2001) and Joranson and Gilson (2001), used this tool to explore various clinicians' attitudes toward, and knowledge of opioid use, but neither of these studies reported the validity or reliability of using this tool for pharmacists and physicians.

To further test the validity and reliability of the two tests, a pilot study was conducted using the scales in this study. Fifteen clinicians were asked to take the survey, which was subsequently reviewed by a panel of experts.

Data collection took place over a period of ten months, between August 2015 and May 2016. After obtaining ethical approval to conduct the study, the data collection proceeded as follows: clinicians who were eligible to participate were identified by their personnel department, their head of the department, or by direct contact. Those who met the inclusion criteria were invited to participate. The clinicians were instructed to put their completed questionnaires into an envelope pinned to the notice board at the nurses station. The completed questionnaires were collected from the wards and clinics every morning. As the completed questionnaires were received, they

were coded for analysis and kept in envelopes. Of the 850 participants, 473 (55.6%) completed and returned the questionnaires. This included 160 (15.7%) physicians, 200 (24.1%) nurses, and 113 (11.1%) pharmacists. The response rate was 56%.

Data analysis

Data analysis was performed using SPSS statistical software, Version 20. Before starting the analysis, data distributions of all study variables were checked. We found that all study variables were normally distributed despite some abnormal skewness and kurtosis values. Descriptive statistics (mean; standard deviation – SD; and percentages) were computed to describe the participants, and the barriers to effective pain management. Inferential statistics were also used to make inferences about the characteristics of the participants, and the difference between physicians, pharmacists, and nurses. This included parametric tests: the independent t-test, and one-way between-group analysis of variance test (ANOVA). A p-value of 0.05 or less was chosen to determine statistical significance for statistical analysis. Finally, to examine the relationship between the pain barriers

and demographic variables or knowledge levels, Spearman's correlation coefficient (r) was used.

Results

Description of participants

A total of 850 questionnaires were distributed to the clinicians in four Jordanian hospitals providing cancer care. A total of 473 questionnaires were returned. The response rate was 56%. 52% (n = 246) of the professionals were male, 84.1% (n = 398) were Muslim, 53% (n = 250) were married, and 84.3% (n = 399) were under 40 years of age. The minimum length of general medical experience for more than 98% of the health professionals was one year, while the maximum was 21 years (mean = 5.8; SD = 4.1).

The longest period of oncological experience was 72 months, while the shortest was six months. Over 60% (n = 285) of the staff had oncological experience of between six months and one year. Only 59 (12.5%) of the 473 healthcare professionals reported having received pain management education. The majority (n = 369) of the professionals held bachelor degrees (see Table 1).

Table 1 Demographic characteristics of clinicians

Characteristics		Physicians n = 160 (%)	Nurses n = 200 (%)	Pharmacists n = 113 (%)	Total n = 473 (%)
Gender	male	95 (59.4%)	104 (52%)	47 (41.6%)	246 (52%)
	female	65 (40.6%)	96 (48%)	66 (58.4%)	227 (48%)
Age	18–30	42 (26.3%)	141 (70.5%)	50 (44.2%)	233 (49.2%)
	31–40	75 (46.9%)	53 (26.5%)	40 (35.4%)	168 (35.5%)
	41–50	33 (20.6%)	6 (3%)	22 (19.5%)	61 (12.9%)
	51–60	10 (6.3%)	0.0	1 (0.9%)	11 (2.3%)
Religion	Muslim	125 (78.1%)	183 (91.5%)	90 (79.6%)	398 (84%)
	Christian	31 (19.4%)	12 (6%)	19 (16.8%)	62 (13%)
Marital status	married	99 (61.9%)	95 (47.5%)	56 (49.6%)	250 (52.9%)
	single	57 (35.6%)	100 (50%)	55 (48.7%)	212 (44.8%)
	divorce	2 (1.3%)	0.0	0.0	2 (0.42%)
Education	diploma	6 (3.8%)	30 (15%)	2 (1.8%)	38 (8.1%)
	bachelor	110 (68.8%)	155 (77.5)	104 (92%)	369 (78%)
	master	36 (22.5%)	14 (7%)	7 (6.2)	57 (12.1%)
	PhD	6 (3.8%)	0.0	0.0	6 (1.3%)
Pain Eeducation	yes	27 (16.9%)	26 (13%)	6 (5.3%)	59 (12.5%)
	no	133 (83.1%)	174 (87%)	107 (94.7%)	414 (87.5%)
General experience	mean (year)	6.5	5.2	5.8	5.8
	SD	3.8	4.3	4.0	4.0
Oncological experience	n	160	200	113	473
	mean (month)	14.3	19.6	19.6	17.8
	SD	12.66	16.2	15.6	15.1

SD – standard deviation; n = number; PhD – Doctor of Phiolosophy.

Barrier Questionnaire II (BQ-II) results

The mean score was 1.57 (SD = 0.79) for physicians, 1.99 (SD = 0.70) for pharmacists, and 2.25 (SD = 0.76) for nurses (Table 2).

Healthcare Professional Barriers

Fears Related to Analgesic Use (Addiction Fears)

Fears related to addiction due to the use of analgesics were found to be the most powerful attitudinal

barrier. Concerns related to addiction, tolerance, and the inability to track changes in a patient's body due to pain medication received a rating of 3 or above from 42% (n = 84) of nurses, 38% (n = 43) of pharmacists, and 28% (n = 45) of physicians. Furthermore, 16% (n = 26) of physicians, 28% (n = 56) of nurses, and 22% (n = 25) of pharmacists expressed deep concern about addiction by awarding the three items related to it a rating of 4 and above. In addition, tolerance also caused concern among health professionals, with 35% (n = 70) of nurses, 23% (n = 26) of pharmacists, and 17% (n = 27) of physicians expressing concern. There was a statistically significant difference at $p < 0.001$ level in the mean scores of addiction fears in all clinician groups [$F_{(2; 470)} = 10.9$; $p < 0.001$]. Despite achieving statistical significance, the actual difference in mean scores between the groups was quite small. Nurses displayed the highest level of fear, whereas physicians displayed the lowest. There was only one significant difference in the total barrier scores of tolerance between male nurses (mean = 2.9; SD = 1) and female nurses (mean = 2.56; SD 1.22; $t_{(198)} = 2.1$; $p < 0.038$). No other significant differences were detected, either in addiction or disease progression scores for male and female clinicians.

Table 2 Descriptive characteristics of the BQ-II

	Physicians n = 160	Pharmacists n = 113	Nurses n = 200
mean	1.57	1.99	2.25
median	1.53	1.85	2.33
mode	2.44	1.37	2.52
SD	0.79	0.70	0.76
range	3.41	3.26	3.41
minimum	0.04	0.48	0.41
maximum	3.44	3.74	3.81

SD – standard deviation

Fears Related to Opioid Side Effects

Concerns about the side effects of pain medications were significantly [$F_{(2; 470)} = 30.1$; $p < 0.005$] more common in nurses (mean = 1.95; SD = 0.987) than in physicians (mean = 1.23; SD = 0.8) and pharmacists (mean = 1.47; SD = 0.843). The highest concerns related to pain medication side effects among all clinician groups were those relating to confusion, doing things that cause embarrassment, and drowsiness. Another aspect of pain medication side effects was related to the belief that strong analgesics can damage or suppress the immune system. This belief was weak among physicians (mean = 1.04; SD = 1.29) and pharmacists (mean = 1.4; SD = 1.4), with only 7% of them

awarding it a rating of 4 or above. However, the same belief was stronger among nurses (mean = 1.96; SD = 1.504), being awarded a rating of 4 or above by 12% (n = 24). Finally, no significant gender-related differences were identified in this factor.

Communication

Pain reporting is considered to be an essential part of pain management. To study this issue, the clinicians were asked to rate six items within the BQ-II. The results indicated that almost a fifth of physicians (n = 30; 18.8%) and pharmacists (n = 20; 17.7%), and over a third of nurses (n = 82; 41%) awarded the items related to "being good" a rating of 3 or above, thus agreeing with the notion that good patients do not complain about pain. Moreover, there was much agreement (rate ≥ 3) among them regarding the notion that if patients talk about pain, they are thought to be complainers. On the other hand, there was less agreement between different clinicians regarding the belief that patients' reports of pain might divert physicians from treating the cancer itself. The mean scores of this factor in total were 1.46 (SD = 0.99) in physicians, 2.2 (SD = 0.95) in nurses, and 1.51 (SD = 0.96) in pharmacists. The difference between them was significant at [$F_{(2; 470)} = 33.8$; $p < 0.001$]. A comparison of male and female scores for each clinician group using an independent t-test revealed no significant difference.

Cultural beliefs

The belief that pain is an inevitable part of cancer experience, and that it cannot be relieved, was not a major concern among the majority of physicians and pharmacists. However, about one in four nurses expressed worries related to this issue. Cultural beliefs, which were addressed by three items, received a mean score of 0.74 (SD = 0.77) from physicians, 1.65 (SD = 1.18) from nurses, and 1.15 (SD = 0.95) from pharmacists. The difference was significant between all groups [$F_{(2; 470)} = 37$; $p < 0.001$]. In addition, an independent t-test revealed a significant difference in cultural belief scores between male nurses (mean = 1.45; SD = 1.09) and female nurses [mean = 1.86; SD = 1.24; $t_{(198)} = -2.5$; $p < 0.013$]. Although cultural beliefs were stronger in nurses than other professionals, this factor was found to be the weakest factor influencing effective professional pain management.

Results of the NKAS

The participants were first required to complete the BQ-II, before moving on to the NKAS, so that any correlation between barrier and knowledge scores, in addition to different knowledge deficit aspects,

could be examined. The differences between the mean scores, and the relationship between clinicians' demographics were also explored. Clinicians' knowledge levels and their attitudes regarding cancer pain relief were analyzed in terms of the number of correct and incorrect answers to each question, as well as by calculating the overall score for each individual respondent. The NKAS is usually divided into three main parts. The true or false, multiple choice, and case study questions focus on five major aspects: a) assessment of pain, (questions 1, 3, 4, 5, 27, and 29); b) misconceptions regarding pain medication use – addiction, tolerance and side effects, (questions 13, 14, 16, 21, 27, and 32);

c) pharmacological pain medications, including two categories, adjuvant medications (questions 6, 10, 12, 15, and 28), and dosage and frequency (questions 9, 11, 19, 23, and 26); d) non-pharmacological methods to relieve cancer pain (questions 7, 20, and 22); and e) cultural beliefs (questions 18 and 30). Questions 2 and 17 were omitted from the analysis because of their association with pediatrics.

The output of a one-way between groups analysis of variance test (ANOVA) revealed a significant difference in overall knowledge scores between physicians, nurses and pharmacists (Table 3).

Table 3 Overall knowledge scores of different clinician groups

Clinician Groups			Mean Difference	Std. error	Sig.	95% Confidence Interval	
Total mean 51.65 SD 15.23	Mean SD	Group				Lower Bound	Upper Bound
Physicians	58.37	nurses	12.22*	1.56	0.000	8.46	15.99
	12.65	pharmacist	6.29*	1.88	0.003	1.77	10.82
Nurses	46.1	physician	-12.22*	1.56	0.000	-15.99	-8.46
	12.15	pharmacist	-5.93*	1.60	0.001	-9.79	-2.07
Pharmacists	52.03	physician	-6.29*	1.88	0.003	-10.82	-1.77
	14.39	nurses	5.93*	1.60	0.001	2.07	9.79

SD – standard deviation

The highest score was achieved by physicians (94%), followed by pharmacists (88.2%), and nurses (82.3%). Participants' total scores ranged from 17.6% to 94.12%, with a mean score of 51.6% (17.65), and a SD of 15.2% (5.2). The actual difference in the mean scores between all groups was clear and significant, as indicated in Table 3. Further to this, the results showed that over a third of physicians (35%; n = 56), over half of pharmacists (52%; n = 59), and the majority of nurses (71%; n = 141) scored below 50%. In total, over half of the participants' scores (53%; n = 256) were below 50%.

Finally, the relationships between pain barriers and different demographic variables were explored with Spearman's correlation coefficient. A significant positive correlation was found between physicians' overall knowledge score and age (r_s = 0.25; p < 0.001), income (r_s = 0.576; p < 0.001), general medical experience (r_s = 0.202; p < 0.001), and oncological experience (r_s = 0.235; p < 0.007). Similarly, there was a positive correlation between overall knowledge score and pharmacists' income (r_s = 0.256; p < 0.007), education (r_s = 0.279; p < 0.003), and oncological experience (r_s = 0.326; p < 0.002). Surprisingly, the only significant correlation detected in nurses was between pain education and their overall knowledge scores

(r_s = -0.266; p < 0.001), but unfortunately, it was a negative correlation. An important outcome of this study was the significant negative relationship between the overall knowledge score achieved in the NKAS and the total barrier scores achieved in the BQ-II (r_s = -0.233; p < 0.001), linking level of knowledge to the barrier levels of clinicians.

Discussion

In the present study the results are generally consistent with those from previous research into the same clinician groups. The results identified some major aspects of knowledge deficit in, and attitudinal barriers towards effective cancer pain management, including pain assessment, myths and misconceptions about opioids and pharmacological and non-pharmacological pain management.

The respondents exhibited many misconceptions related to pain analgesics. Fears related to addiction and side effects were generally highest among nurses - results consistent with previous studies (e.g., Al Khalaileh, Al Qadire, 2012). This finding could be related to the shortage of nursing knowledge, and the need for more training regarding dosage, administration, and potential side effects of pain analgesics.

A major factor affecting adequate cancer pain management by clinicians was fear of side effects, especially respiratory depression. Almost a quarter of physicians, and over a third of nurses and pharmacists exaggerated the risk of respiratory depression. These findings are consistent with previous studies (Zanolin et al., 2007; Paice, Ferrell, 2011). Concerns over administering opioids to cancer patients in Jordan may be due to inadequacy in clinicians' knowledge related to pharmacological principles of pain management, and preventive methods for respiratory depression.

Such fears could be the result of clinicians frequently confusing the terms of addiction, tolerance, and physiological dependence, and their lack of knowledge of opioid usage and preventive methods for respiratory depression. This is not surprising, since the literature continues to cite these as major barriers in pain management. This suggests that clinicians in Jordan will consequently under-treat cancer pain, and the quality of cancer care will be further negatively affected. Educational and training courses for different health professional groups in Jordan, according to their needs, might be an appropriate solution to this problem.

Nurses were influenced by their own cultural beliefs about pain, and these consequently affected their behavioral responses (Peacock, Patel, 2008). Nurses in this study possessed the highest level of fatalistic beliefs about cancer pain – a finding supported by Al Khalaileh, Al Qadire (2012) and Saifan et al. (2015). It could, therefore, be argued that as nurses are the professionals who are most involved in different aspects of cancer care, they may bring their own cultural attitudes and beliefs to the communication and interpretation of patients' experience of pain, which in turn affects pain reporting by patients and their families, and pain assessment by nurses.

Differences in beliefs between professionals can often produce communication problems (Randall-David et al., 2003; Monsivais, McNeill, 2007; Al Khalaileh, Al Qadire, 2012). A large proportion of nurses agreed with the notion that patients' reporting of pain might divert physicians from treating the underlying cause of the disease, and that good patients do not report their pain. Few doctors and pharmacists agreed with such notions. This in turn implies a breakdown in communication, and worse pain assessment, since nurses (the clinicians most responsible for pain assessment) deny patients the right to report their own pain. Consequently, patients are induced or even obliged to hide their pain, since the team taking care of them discourage their reporting of suffering.

Over half of the healthcare professionals in Jordan inaccurately assessed patient pain when presented with two case studies, and many discouraged patients from self-reporting pain regardless of patients' natural desire to do so – results consistent with studies carried out in Belgium by Craig (2014) and Zanolin et al. (2007). This indicates a lack of knowledge regarding the experience of pain. It is apparent that Jordanian clinicians make their own judgments about patient pain rather than believing patients' own reports of pain, an observation supported by the results of both case studies.

Underestimation of patient pain by clinicians was one of the most worrying findings of this study. It is apparent from this study that the majority of health professionals in the country (especially nurses) did not rely on patient reports of pain when providing pain management medication. These results are consistent with Zanolin et al. (2007) who found that the majority of nurses and physicians believed in giving placebos to determine whether pain was real. It seems that the participants chose to rely on vital signs, or placebos, rather than patient reports, and tended to encourage patients to simply put up with pain. This study also indicated that such distrust of patients might be present, especially in relation to clinicians' decisions about opioid titration and administration.

The respondents demonstrated deficits in many areas of basic pain management, including pharmacological and non-pharmacological strategies. Low scores were achieved for questions addressing pharmacological knowledge and attitudes. Over half of physicians and pharmacists, and the majority of nurses in this study believed that if a patient can be distracted, they are not experiencing high pain intensity. This is congruent with previous research undertaken into health professionals' attitudes and knowledge (Bernardi et al., 2007; Zanolin et al., 2007; Borgsteede et al., 2011; Al Khalaileh, Al Qadire, 2012).

The results of the current study indicated that there was a significant relationship between general clinical experience, oncological experience, and overall knowledge score of physicians; and between the general experience and overall knowledge of pharmacists. Surprisingly, there were no such relationships in nurses, although there was a significant negative relationship between nurses' overall knowledge and pain education. These contradictory results amongst nurses may be related to the fact that pain education and training in cancer pain management are rather poor in Jordanian nursing schools, and in hospitals (Al Khalaileh, Qadire, 2013; Omran et al., 2014).

Another explanation for ineffective pain management in Jordan, supported by the demographic data, was the inability of the healthcare system to retain its most experienced staff. It was clear from participants that cancer care in Jordan is highly dependent on inexperienced staff, among whom the average oncological experience was approximately only 18 months. This element was further explained by two significant relationships: firstly, an inverse relationship between the professionals' income and total barrier scores; and secondly, a positive relationship between professionals' income and overall knowledge. Incentives and continuing education might be helpful in improving this situation, since cancer care is not an attractive area for clinicians in Jordan.

The results of this study revealed that the professionals who stayed longer in oncological practice displayed lower attitudinal barriers and higher knowledge levels related to fears of addiction and side effects, communication, and cultural beliefs – results consistent with Korcz's study (Korcz, 2003). This outcome confirms the importance of staffing cancer care settings in Jordan with experienced personnel to improve cancer services.

Implications for Healthcare Professionals

The information that emerged from this study involving the 473 participants who completed the study questionnaires (Barriers Questionnaireoi-II and Nurses Knowledge and Attitudes Survey) helps to identify areas of strength and weakness in all of the areas surveyed, and emphasizes the barriers to good pain management among healthcare professionals. Fears related to analgesic use, fears related to opioid side effects, poor communication, cultural beliefs, and lack of knowledge were the most clearly identified barriers to cancer pain management. Recognizing them will assist in planning and developing pain management strategies that could have a positive impact on patient quality of life. Additionally, the curriculum of healthcare professionals should be modified to cover all possible barriers that have been explored in this study, thus enhancing their knowledge and fostering positive attitudes and beliefs. Health administrators should create a positive environment for their employees in order to maximize job stability and experience. It is recommended that further research be undertaken, using a variety of settings and geographical areas to achieve a representative sample.

Limitations of study

The findings of this study were limited by the use of a self-report survey questionnaire and convenience sampling technique. The use of closed questions, such as true or false and multiple-choice questions, may have limited the veracity of survey results.

Conclusion

The information that emerged from this study helps to identify the current barriers and misconceptions among health professionals that prevent effective pain management for cancer patients. The main barriers and misconceptions included Fears related to addiction and side effects of the pain management medications, lack of knowledge of opioid usage and preventive methods for medication side effects, and the influence of nurses own cultural beliefs about pain. Other barriers were raised such as the incompetency of some clinicians to assess and manage pain, and the underestimating of some healthcare professionals of pain and its influence on patients' health. To maximize the role of health professionals in this area, health administrators need to provide them with more specialized training and empowerment.

Ethical aspects and conflict of interest

After ethical committees in either public or private settings had approved the study proposal, all eligible personnel were invited to complete the questionnaires. Their consent was implied by their return of the questionnaires. Issues of anonymity and confidentiality were addressed. There were no conflicts of interest in the current study.

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Author contribution

Conception and design (ARS, IHB), data analysis and interpretation (AB, IA), manuscript draft (MA), critical revision of the manuscript (MMA), final approval of the manuscript (ARS, IHB).

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