

Analysis of Socio-Economic Disparities on the Outcome of Pain Management in Cancer Patients in Middle Eastern Countries

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Abstract

Background: Cancer incidence in the Middle East is predicted to increase significantly in the near future. In recent years, some progress has been achieved in providing palliative care to cancer patients; throughout this part of the world, pain management is a more complex issue, ascribable to local traditions and beliefs which put a greater emphasis on the psychological, emotional and spiritual aspects of suffering. Socio-economic factors further contribute to the complexity of the problem in lower-middle income countries in the region.

Objective: To further analyze the barriers related to pain management, while comparing high- income, higher-middle income and lower-middle income countries (according to the World Bank categories) in the Middle East.

Design: Statistical analysis of a regional survey.

Setting/Subjects: Thirteen countries in the Middle East; the sample of 604 individuals was comprised of physicians, and pharmacists; employed in various health care settings.

Results: 64.19% of respondents in high-income countries achieved satisfactory outcomes, whereas only 52% achieved satisfactory outcomes in lower-middle income countries. This disparity can be associated with various economical factors, such as lack of resources; however, while analgesics cannot fully control pain in its entirety, patients would certainly benefit from them, and the usage of these analgesics is diminished by the cardinal role that religion and culture play in pain management in these countries.

Conclusion: Cancer pain management should focus much more on the emotional and spiritual aspects of patients' suffering as patients lend great importance to their religious beliefs and traditions. The poorer they are, the more connected and devoted they are to a religious lifestyle.

Keywords: Pain; Cancer; Middle east; Lower- income countries

Introduction

We recently published a descriptive survey about global perspectives concerning pain management [1]. The present study further analyzes the data from the Middle East in order to determine the association among variables relating to patients and physicians satisfaction as part of the outcome of their pain treatment. This present study is confined to countries in the Middle East, where each country has significant variations in population, size, income, Human Development Index (HDI), health outcomes and health expenditure [2]. Countries are arranged into three groups, according to their current socio-economic status [3].

Pain management is a critical component of palliative care services and relies, according to the World Health Organization (WHO) on:

- 1) Local policy (regulations);
- 2) Education (training at pre- and post- graduate levels);
- 3) Medication availability (primarily opioid analgesics); and
- 4) Implementation (willingness to prescribe opioids) [4].

In the Middle East, the median prevalence of cancer pain is 70%. Further, psychosocial and psycho-economical factors have been associated with cancer-related pain in most low- and middle-income countries, globally. The latter includes fear of opioids, poverty, illiteracy, social stigma around the use of morphine and inappropriate pain management [5].

There is a misperception that pain is an inevitable consequence/symptom of cancer, and that it must be endured by patients. In contrast to many other parts of the world, countries in the Middle East strongly advocate for patients' pain and have empathy and deep consideration for the patient. Nurses with specialist palliative care training are of the utmost importance in Israel, as they have many of the same tasks as the physicians. Nurses are among those who are responsible for coordinating patients' complex care needs and for following-up on and adjusting medication and dosage. At home, nurses insure patients' equity and medication compliance. The diversity within Israel places special demands on the professional team and, in particular, on nurses who take care of cancer patients. The multi-ethnic, multi-lingual and spiritually diverse population calls for specialized care for those of different socio-cultural and ethnic backgrounds [6].

Methods

The Middle East Cancer Consortium (MECC) collaborates with its trainees, who were trained by MECC staff, to generate a sample of professionals who were already involved in caring for cancer pain, be it in hospitals or in the community. MECC invited experienced health care professionals from 13 countries throughout the Middle East: Qatar, Saudi Arabia, Sudan, the United Arab Emirates, Yemen, Cyprus, Egypt, Iraq, Israel, Jordan, Palestine, Iran, and Turkey. A survey was coordinated in each respective country to determine participants eligibility to take part in this survey. The Technion's (Israel Institute of Technology) Behavioral Sciences Research Ethics Committee approved this study (No.2018-043).

Instrument Development

This study was questionnaire-based and required no other intervention involving the respondents. Experienced translators

translated the survey from English to Arabic, Farsi and Turkish and, thereafter, professional specialists performed back translation for validity.

Data Collection and Data Analysis

Survey forms were disseminated via email and analysis was stratified according to the World Bank's income category classification for Middle Eastern countries. Two 'outcomes' were selected:

- 1) Percentage of cancer patients who could achieve a satisfactory outcome from the pain therapy they received, and
- 2) Percentage of cancer patients who actually achieved a satisfactory outcome from their pain therapy.

These outcomes were chosen as they indicate the overall quality of cancer pain management.

Statistical analysis using Kolmogorov-Smirnov and Shapiro-Wilk tests determined that the data checked the normality of the distribution. Levene statistics showed unequal variance across groups; therefore, conducting non-parametric tests (Mann-Whitney) was deemed appropriate. Countries were stratified by three World Bank income categories in the Middle East. Data was entered into SPSS (Statistical Package for Social Sciences) software. Mann-Whitney tests were performed on binomial/categorical variables for group comparison. Analysis of variance was employed to evaluate World Bank group differences.

For the correlation analysis and the Spearman test was used. Statistical significance level was set as $p \leq 0.05$.

Results

This survey included 13 countries in the Middle East. When asked about satisfactory outcome of therapy for cancer pain, the majority of respondents in high-income countries (mean 69.81 ± 17.67) answered favourably; those from low-middle income countries responded significantly less favourably (mean 52.1 ± 22.43); and those from high-middle income countries were closer to the high-income countries (mean 64.19 ± 22.42) (Table 1). The feasibility of the division of countries in the region is confirmed by the perceived ratio of the following variables:

1. Main profession of the caregiver
2. Frequency of treating the cancer patient
3. Mode of training in pain management
4. Discussion with family members

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Table 1: Outstanding differences in some basic parameters among the three groups of countries.

Variable	Satisfactory outcome of pain therapy (expressed in %)				
	Could achieve	Actually achieved	Pain assessment practices	Potential barriers to optimal pain management	Opioid consumption (Morphine equivalent mg/capita)
Country Groups*					
1	60.07 ± 24.45	64.19 ± 22.42	4.83 ± 1.72	11.90 ± 3.10	3.77 ± 0.35
2	50.79 ± 22.26	52.10 ± 22.43	4.12 ± 1.99	10.91 ± 2.23	16.78 ± 23.97
3	73.63 ± 17.67	69.81 ± 17.57	5.02 ± 1.42	13.41 ± 3.57	67.38 ± 59.37

*According to World Bank Income Category 2017
 Group 1 - Qatar, Saudi Arabia, United Arab Emirates (High Income Countries)
 Group 2 - Jordan, Egypt, Iraq, Iran, Sudan, Palestine, Yemen (Lower-Middle Income Countries)
 Group 3 - Turkey, Cyprus, Israel (Upper-Middle Income Countries)

Table 2: Correlation coefficients of the variables indicating towards significant relationships between the outcome of pain management and individual factors in the three groups of countries (Spearman).

Variable	Patients are screened for pain	Pain management being discussed with family	Lack of available palliative care services	Used WHO guidelines	No use of guidelines	Fear of addition to opioids	Did receive training in pain management
Country Groups*							
1	P=0.027	P=0.017	P=0.032	P=0.045	P=0.045	P=0.012	P=0.005
2	P=0.073						p=0.055
3	P=0.023	P=0.010	p<0.000	P=0.009	P=0.002	p<0.000	P=0.006

*According to World Bank Income Category 2017
 Group 1 - Qatar, Saudi Arabia, United Arab Emirates (High Income Countries)
 Group 2 - Jordan, Egypt, Iraq, Iran, Sudan, Palestine, Yemen (Lower-Middle Income Countries)
 Group 3 - Turkey, Cyprus, Israel (Upper-Middle Income Countries)

5. Patient's reliability to report on pain
6. Reluctance of physicians to prescribe opioids
7. Patient's inability to pay the costs of opioids
8. Fear of developing addiction to opioids

One of the more outstanding findings referred to the use of opioids (Table 1) where, in the high-middle income countries, the morphine equivalent (mg/capita) was at the highest consumption (67.38 ± 59.37); consumption in the low-middle countries was much lower (16.78 ± 23.97); and consumption in the high-income countries was the lowest (3.77 ± 0.35). When asked about details of their clinical practice (screening for pain), there was no significant difference with regard to pain assessment practices: a mean of 5.02 ± 1.42 in upper-middle income countries versus 4.83 ± 1.72 in high-income countries and 4.12 ± 1.99 in low-middle income countries.

Concerning potential barriers to optimal cancer pain management, differences were found among countries of the three groups: in the high-income countries, the mean was 13.41 ± 3.57 while, in the upper-middle income countries it was 11.9 ± 3.10 and, in the low-middle income countries, it was 10.91 ± 2.83 .

Barriers: Regarding the perceived significance of potential barriers to the treatment of cancer pain, lack of knowledge, inadequate training of health care workers, economic difficulties, and lack of adherence to any kind of guidelines were deemed "highly significant" barriers by respondents in most groups of countries, and at least "moderately significant" with regard to the involvement of religion, physicians, and nurses (Table 2).

Barriers related to patient factors: In all three groups of countries, respondents perceived that patient's responses to questions such as: reporting of pain, inability to pay for medicines (especially opioids) and fear of opioid side-effects (addiction) were only "moderately

significant".

Marked differences were found between High Income and Upper-Middle Income countries, as compared to Lower-Middle Income countries in basic issues related to pain management (Table 2):

1. Lack of available palliative care cases
2. No use of any guidelines (neither WHO nor local)
3. Fear of addiction to opioids
4. No discussion with the patient's family

Whereas, in the higher income countries, there were significant correlations between these factors and the outcome of pain management, this was not the case in the lower-middle income countries.

Analysis of variance and linear regression: Pain management issues were checked, using categorical variables and independent t-tests for countries' variables using the Spearman test (Tables 3 and 4). In the multivariate regression analysis of the percentage of patients who actually achieved a satisfactory outcome from their pain therapy the connections revealed in the correlation analysis do not always appear in the results of the multivariate regression analysis. In the latter, a different phenomenon was noticed (Table 4). Again, in the lower-middle income countries, most factors did not appear to have an influence on patients' satisfaction; here, however, countries belonging to the high-income category also showed a similar pattern. The countries that differed were those in the upper-middle income group.

These apparent discrepancies raise some questions:

1. To what degree is the nurses' involvement in pain care essential?
2. Is continuing education important for the success of pain management?

Table 3: Multivariate regression analysis indicating the percentage of patients who COULD achieve a satisfactory outcome from therapy for cancer pain.

Variable	Age	Gender	Professional experiences	Main Occupation (Nursing)	Your colleagues' performance	Frequency of treating cancer patients	Post-graduate training	No training	Preferred education locale	Adherence to country's guidelines	No guidelines	Pain Assessment	Patients' reporting of pain	Patients' inability to pay for opioids	Opioid side effects/addiction
Country Groups*															
1				$\beta=0.235$ $p=0.034$		$\beta=0.392$ $p=0.002$		$\beta=0.309$ $p<0.001$					$\beta=0.272$ $p=0.004$	$\beta=0.192$ $p=0.089$	$\beta=0.310$ $p=0.010$
2					$\beta=0.143$ $p=0.006$		$\beta=0.123$ $p=0.017$		$\beta=0.101$ $p=0.097$	$\beta=0.097$ $p=0.062$			$\beta=0.330$ $p=0.051$		
3	$\beta=0.202$ $p=0.080$	$\beta=0.096$ $p=0.073$	$\beta=0.232$ $p=0.026$				$\beta=0.190$ $p<0.001$				$\beta=0.209$ $p<0.001$	$\beta=0.107$ $p=0.055$	$\beta=0.340$ $p<0.001$		
*According to World Bank Income Category 2017 Group 1 - Qatar, Saudi Arabia, United Arab Emirates (High Income, (n=39)), Constant 0.006, $R^2 = 0.786$, $p<0.001$ Group 2 - Jordan, Egypt, Iraq, Iran, Sudan, Palestine, Yemen (Lower-Middle Income, (n=321)), Constant 41,530, $R^2=0.194$, $p<0.001$ Group 3 - Turkey, Cyprus, Israel (Upper-Middle Income, (n= 283)), Constant 60,936, $R^2 = 0.305$, $p<0.001$															

Table 4: Multivariate regression analysis concerning the percentage of patients who actually achieve a satisfactory outcome from therapy for cancer pain.

Variable	Religion (Christian)	Main Occupation (Nursing)	Your colleagues' performance	Under-graduate	Post-graduate	No training	Preferred Education (in other countries) *	Adherence to country's guidelines	Adherence to WHO guidelines	Discussion with family	Patients' reporting of pain	Physicians' reluctance to prescribe opioids	Patients' inability to pay for opioids	Opioid side-effects improve with time
Country Groups*														
1				$\beta=0.436$ $p=0.007$	$\beta=0.296$ $p=0.070$					$\beta=0.243$ $p=0.043$		$\beta=0.246$ $p=0.100$		
2					$\beta=0.173$ $p=0.026$						$\beta=0.411$ $p<0.001$	$\beta=0.003$ $p=0.058$		$\beta=0.115$ $p=0.010$
3	$\beta=0.117$ $p=0.043$	$\beta=0.108$ $p=0.049$	$\beta=0.218$ $p<0.001$			$\beta=0.135$ $p=0.014$	$\beta=0.107$ $p=0.044$	$\beta=0.124$ $p=0.023$	$\beta=0.149$ $p=0.011$		$\beta=0.308$ $p=0.011$		$\beta=0.184$ $p<0.001$	$\beta=0.107$ $p=0.048$
*According to World Bank Income Category 2017 Group 1 - Qatar, Saudi Arabia, United Arab Emirates (High Income, (n=39)), Constant 31,250, $R^2 = 0.342$, $p<0.002$ Group 2 - Jordan, Egypt, Iraq, Iran, Sudan, Palestine, Yemen (Lower-Middle Income, (n=288)), Constant 24,157, $R^2=0.251$, $p<0.001$ Group 3 - Turkey, Cyprus, Israel (Upper-Middle Income, (n= 277)), Constant 52,599, $R^2 = 0.320$, $p<0.001$														

3. Is the adherence to guidelines (either WHO or local) really essential?

4. Is patient's reporting about his/her pain really mandatory?

These questions become valid when looking at the regression analysis of countries in the High-Income group. By contrast, countries in the Upper-Middle income group revealed different findings, where most of the above questions were found to be significant. Different findings were found in the Lower-Middle Income group of countries (Table 4).

Discussion

This study confirmed that patients residing in lower-middle income countries experienced marked differences in the outcome of their pain management, apparently due to several factors such as: lack of available of palliative care services, no use of any guidelines, minimal discussion with family members and fear of addiction to opioids. Accordingly, we were not surprised that, in this analysis, 64.19 ± 22.42 of the respondents in the high-income countries and 69.81 ± 17.57 in the upper middle-income countries expressed satisfaction with the outcome of their pain therapy, compared with only 52.10 ± 22.43 in the lower-income countries in the Middle East. Surprisingly, though, half of the respondents appeared satisfied with their treatment, despite the many barriers throughout the journey. One explanation for this paradox relates to socio-economic reasons, where suffering from unrelieved pain is the patients' choice. In the Middle East, many cancer patients are inclined to disregard pain, as they view their pain as an unavoidable consequence of cancer. For many patients in the region, the real suffering relates more to emotional, rather than physical,

ailments. Therefore, the palliative care provided to cancer patients in the Middle East requires much more psychological-spiritual support, at least equally important as treatment with opioids and other analgesics. The present study emphasizes that both socio-economic and cultural elements play a critical role in the overall management of pain in cancer patients. The humanistic impact of cancer pain involves not only the patients, but also the caregivers, as many physicians are reluctant to prescribe opioids due to fear and misconception regarding addiction to opioids, along with patients' social stigma, poverty and illiteracy [7]. Furthermore, many healthcare professionals lack adequate education and training and, consequently, have misconceptions about pain treatment.

International (WHO) and local guidelines and assessment tools exist but, unfortunately, they are not implemented in clinical practice.

As already mentioned above, there is a misconception that cancer pain is an inevitable ramification/symptom of the disease which must be tolerated by patients, while physicians focus on treating the cancer itself. One of the lessons learned in this study is that physicians need to spend more time relating to the patient as a human being and not just as a cancer patient. We fully realize the difficulties involved in this recommendation and its obstacles, as it is well known that physicians are already overburdened or under too much stress to provide sufficient attention; we must also consider the current conditions in hospices and other health facilities, especially in the lower-middle income countries.

Many cancer patients in the region try to find solace and inspiration in their spiritual beliefs and community support. Although they do believe that getting cancer is their fate and they are willing to endure all of the physical suffering, they still face genuine challenges in managing

their emotional distress; as one female patient in the advanced stage of breast cancer once told the corresponding author, “I accept the fact that I got cancer, probably because I sinned and God punished me for that. I can also accept the pain involved, as I probably deserve it. But what really bothers me is, who will take care of my three children after my death?”.

This study identified that physicians in high-income countries receive their pain management training at both under- and post-graduate levels of education, whereas in the lower-middle and higher-middle countries, they did not receive any official training, or perhaps just partial training. To overcome this barrier, more attention must be paid to improving the curriculum and integrating it into clinical practice, while placing a much larger emphasis on the psycho-emotional aspects of care.

The present study provides reliable data, enlightening us with an additional aspect to the complexity of pain management in developing countries in the Middle East.

Limitations

Data was collected using convenience sampling. Selection bias is another limitation. Some questions had missing data, resulting in non-random missing information. These limitations pose challenges in findings that may not be generalizable.

Moreover, this study presents the barriers to adequate cancer pain management from the standpoint of healthcare professionals only and does not consider the patients’ perspectives.

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No competing financial interests exist.

Conflict of Interest

The authors declare no conflict of interest.

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