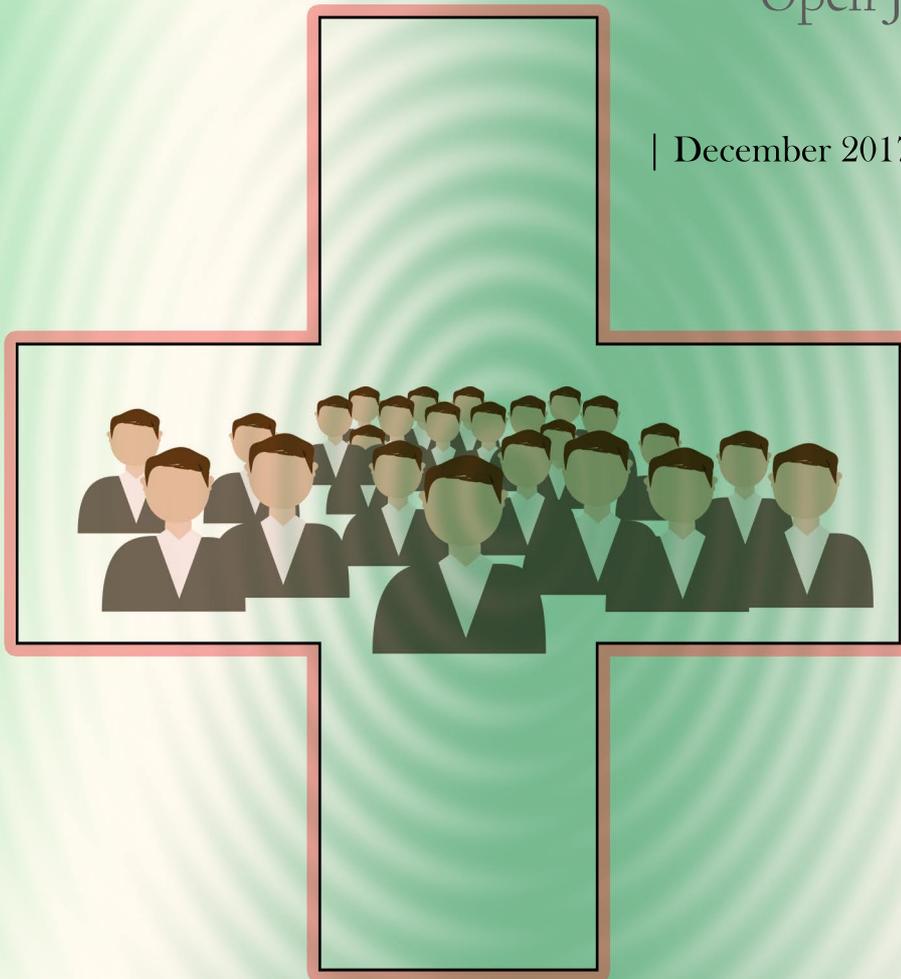


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View Point

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Medical Research from Realism to Abstractism: "Everything we Call Real is Made of Things we cannot Call Real" (Niels Bohr, 1885-1962)

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During the last 2 decades, the medical research underwent a gradual transition from purely quantitative research (post-positivist) to endorse qualitative research (interpretivist) paradigm. This article tries to shed a light on this transition and use fine art examples as analogy. For the sake of clarification it is important to explain some of the terms used in this article for readers whom their interest might be out of the scope of qualitative research or fine art.

For centuries art tradition aimed depicting the details of events, even mythical events in exceptional clarity and preciseness, in another word making the art work believable. The epitome of this endeavour could be represented by the art style of Realism (Figure 1).

Figure 1: Realistic Painting (Jean-Francois Millet, 1814-1875, "The Gleaners," 1857), Musée d'Orsay, Paris.



Realist painters were more concerned about real life events, directing their attention toward marginalised people. Realism reflects a philosophical rather than artistic style. It wanted to show the true nature of reality no matter beautiful or ugly, dark or bright. It must reflect what is out there not what we want to see.¹

Realism in this aspect has its similarities to medical research. Researchers in medical field strive to deal with their research findings in objective way and deal with individuals in health and disease with no presumptions. This is why randomised selection from the population to study a given health phenomenon is essential for the objectiveness of the research.

Realism as a philosophical movement applies to art as it applies to science, except in one aspect. Medicine adopts critical realism, or what has been considered synonym for post-positivism. Positivism states that the purpose of science is simply to stick to what we can observe and measure,² which is true for widely adopted quantitative research in medicine. Quantitative medical research deals with biological facts through numbers, measurements and statistical facts, which govern clinical knowledge and direct the path of treatment.

However, medical research is more toward post-positivism (critical realism) than pure positivism. Post-positivism is a philosophical stance acknowledges that observations could be erroneous and theories are revisable. Scientists, however, should ensure that their observation must be verifiable, reproducible following specific procedures.² This could reflect the main difference between research in medicine and physics.

Medical researchers are aware of the complexity of biological system, imperfections of statistically dependent methodologies and expected procedural errors. This supports the argument toward the fact that mathematics is unable to explain certain phenomena in economics, psychology and biology.³ Despite this fact, medical researchers still rely in the vast majority of their findings on quantitative studies. Only statistical analysis is their proof of reality of a given phenomenon.

Since the 80s of the 20th century there has been growing trend in medicine to embrace patients' values and quality of life (QoL).^{4,5} This led to the development of QoL research, which aimed to deal with health facts from different point of view. Despite it is difficult to find an artistic style or movement that can describe this medical research attitude, it is possible, in some ways, to consider impressionism in its revolution a suitable counter artistic representative to QoL research. In impressionism artists remained honest to the figurative tradition as they depicted the outside reality. They took their canvas outside and performed their paintings outside their studios. They became freer in expressing their understanding of light, colours and the outer environment to be closer to their direct feelings as they paint (Figure 2).⁶ As in QoL research, impressionist artists had their subjective input toward the outer world reality.

This, however, did not shift medical facts from its posi-

tivist position. Even when medical research moved toward subjective (patients side) in evaluating a given health phenomenon, it applied psychometric theory to quantify subjective outcome.⁷ This is why some researchers argued that QoL is not the suitable term for this field of research, and it should be termed as subjective health outcome measure.⁸

There are aspects in human life that cannot be measured or it is difficult to comprehend based on numbers and statistical significances. If the medical researcher wants to understand patient's experience, the meaning of health problem to the patient or their interpretation to their health experience, the researcher needs to embrace an interpretive approach. Otherwise they might miss important opportunities to improve their ability to help the patient through their journey through different health problems and challenges.

Interpretive (qualitative) medical research aims to answer questions cannot be answered by numbers, rankings or statistical values. It is a different research paradigm, which relies completely on human interpretation toward their health problems.^{9,10}

Complete reliance on personal interpretation toward a given phenomenon can be exemplified by using abstract art as analogy. In abstract paintings each spectator has their interpretation toward the painting. These interpretations might be completely different, despite they are dealing with the same painting. There is no tree to say this green field within the canvas is a forest. Since there is no figurative representation of the outer world reality,¹¹ it is difficult to predict the spectator's view of the painting (Figure 3).

The same applies a given health phenomenon where

Figure 2: Impressionist Painting, Woman with Parasol, Madam Monet and her Son 1875, Claud Monet (1840-1926), Collection of Mr. and Mrs. Paul Mellon.



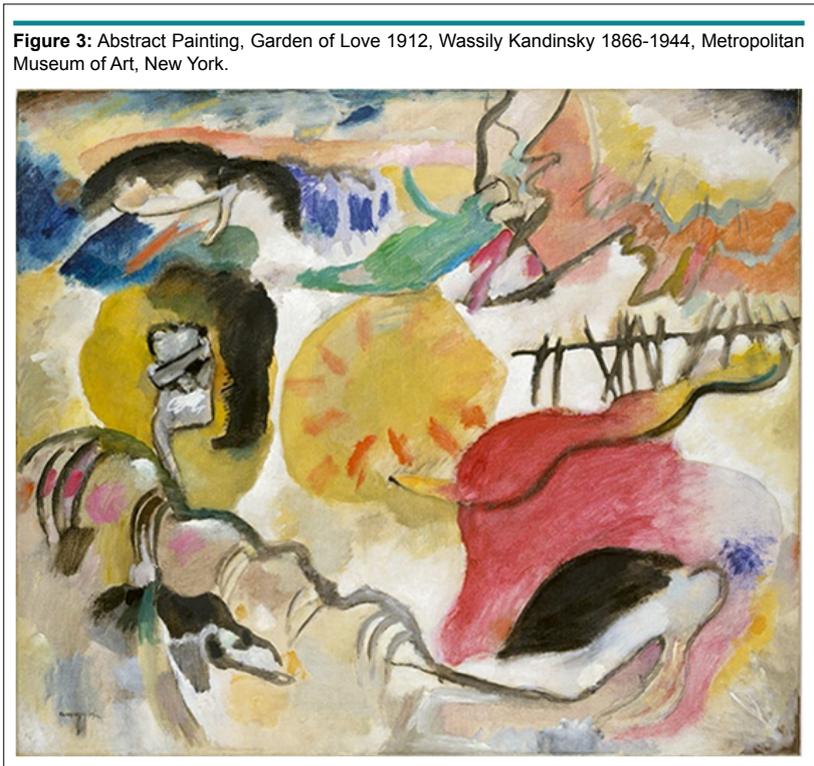


Table 1: Representing the Gap between Patient and Physician Understanding Toward Blow-Out Fractures of the Orbit.

The biomedical clinical concept	Patient's interpretation
Blow-out fracture (orbital wall fracture)	Eye ball injury (injury to the eye)
Diplopia (double vision)	Inability to see
Enophthalmos	Sinking of the eye in the head
Infra orbital paraesthesia	Loosening/knocked teeth
Surgery (to the orbit)	Surgery in the eye

each individual might comprehend, view or feel it in a different way. Patient's view and/or feelings are important aspects of any disease. In a qualitative study done by the author, the data showed a clear gap between patient and physician understanding toward blow-out fractures of the orbit. Table 1 gives an insight how patients, differently, perceive symptoms of this type of trauma than the physician.¹²

Understanding this fact might help clinicians to approach disease management in more effective way. It improves patient-clinician communication. In addition, there is important interaction between the outcome of a disease and the way patient understands or deal with.¹² On this basis qualitative research started to gain popularity in the last decade in medical field with valuable input in medical knowledge.

CONCLUSION

The tendency for medical research to move toward the interpretivist stance might reflect the awareness of medical research-

ers toward the imperfections of quantitative (post-positivist) research. It also reflects the need for more holistic approach in health care.

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Research

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Patient Satisfaction with an Interprofessional Approach to Wound Care in Qatar

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ABSTRACT

Background: Patient satisfaction with healthcare services is an important indicator of the patients' confidence in the healthcare system and a significant indicator of the quality of healthcare services delivered. This study assessed the level of patient satisfaction with wound care service delivery at the Hamad General Hospital (HGH) Outpatient Wound Clinic in Doha, Qatar.

Methods: To complete this research a cross-sectional study design was conducted to survey patients who received wound care services from an interprofessional team at the HGH in Doha, Qatar from January 2015 to February 2016. Through this data collection method these patients' opinions on the services they received through the interprofessional approach were solicited. A total of 81 respondents completed a client satisfaction questionnaire (CSQ-8),¹ modified to include questions on socio-demographic characteristics. Data collection was completed from December 2015 to March 2016.

Results: Overall, results from this study showed that patients were generally satisfied with wound care services delivered by an interprofessional team, as assessed by the CSQ-8. The results revealed favorable ratings of patient satisfaction ranging from 67.9% to 90.1%.

Conclusions: Overall, study findings show that patients were mostly satisfied with wound care services and can be improved. A comparison of mean satisfaction scores by subgroups revealed no significant differences worth reporting.

KEY WORDS: Satisfaction; Interprofessional education; Wound care; Qatar.

ABBREVIATIONS: SCH: Supreme Council of Health; HGH: Hamad General Hospital; IPC: Interprofessional collaboration; CHREB: Conjoint Health Research Ethics Board; CSQ-8: Client Satisfaction Questionnaire.

INTRODUCTION

The client satisfaction questionnaire (CSQ-8)¹ has been used in many settings, including healthcare to obtain feedback on services. Its use in the current study is timely as Qatar is witnessing an exponential growth in population and infrastructure projects. This is characterized by a large influx of expatriate workers to fill the many job opportunities in the construction, service, and healthcare sectors. Faced with the challenge to meet the healthcare needs of a growing population, Qatar's healthcare system is undergoing tremendous transformation and modernization in terms of buildings, equipment, medical procedures, staff recruitment, training and professional development.² This transformation, led by the Ministry of Public Health aims to provide high quality healthcare, including wound care of international standards. This is in accordance with Qatar's National Vision 2030, the framework of Qatar's future development.

Providing such high quality wound care requires that healthcare workers work effectively with their colleagues across other disciplines. This is often referred to as Interprofessional collaboration (IPC). There is evidence to support that employing a multidisciplinary team strategy in healthcare can lead to improved outcomes for patients.³⁻⁷ One study that examined

the outcomes of IPC⁸ found that interprofessional team work decreases medical errors, improves patient satisfaction and patient care, and improves the knowledge and skills of professionals. In another study, the authors⁹ argue that the growing prevalence of non-healing acute and chronic wounds is a major concern. Additionally, the lack of united services aimed at addressing the complex needs of individuals with wounds is a major challenge. According to these authors, IPC in education and practice is very important in being able to provide the best patient care, enhance clinical and health-related outcomes and strengthen the health-care system. These authors⁹ show that a review and analysis of 18 years of literature related to managing wounds as a team showed increasing evidence to support a collaborative team approach in wound care.

Another study,¹⁰ illustrated the importance of IPC in the treatment of wounds. The authors found that IPC can potentially reduce prevalence of wounds and improve wound care more efficiently. Therefore, IPC between healthcare providers should be encouraged as it facilitates appropriate assessment, diagnostic investigations, treatments and care for the patients with wounds.

Some authors¹¹ infer that wound healing can be a complex process, and as such, patients with chronic ulcers require a systematic team approach from healthcare professionals. These authors argue that the wound care team members may vary based on the individual patient's requirements. The interdisciplinary team therefore has to work both with the patients and their families to address the complex treatment requirements of patients with chronic wounds. Through this approach the healthcare professionals can positively influence healing of the chronic wounds by promoting, collaborating and participating in interdisciplinary care teams.

According to some researchers,¹² IPC is very important for preventing pressure ulcers. As such, collaboration with interprofessional teams has been identified as one of the most commonly reported facilitators in the implementation of evidence-based guidelines for wound care. Therefore, IPC as an approach to wound care is necessary for translating research into practice. These authors further explain that in order to prevent pressure ulcers, healthcare providers need consistent, vigilant, and interprofessional approaches. Accordingly, interprofessional workgroups, evidence-based approaches and system-level support will result in a decreased number of pressure ulcers in patients overall.

Researchers¹³ have found that a multidisciplinary structure of the healthcare team is one of the most important components of wound care. This approach would enable healthcare professionals to provide patient care, and work with others to achieve the best possible patient care. These authors also suggest that a multidisciplinary team approach has become an essential component of evidence-based management for both inpatient and outpatient cases of chronic wounds. Such a multidisciplinary team approach aims to combine the important disciplines that contribute to wound healing and to provide a holistic service

to patients with multiple needs. This is accomplished through applying the best available evidence-based care. According to these authors, a multidisciplinary team approach results in improved wound healing and reduced amputation rates, reduced length of hospital stay, reduced number of home visits and a reduction in the incidence of pressure ulcers, thereby reducing the overall cost of care.

Gottrup³ argues that the idea of multidisciplinary teams has become very important in providing wound care. Multidisciplinary wound care collaborations have resulted in a reduction of required home visits, and the range of products used in treating wounds. This author also stresses the importance of the team approach and collaboration between all healthcare professionals to facilitate high quality holistic care for patients.

According to some researchers⁹, adopting an interprofessional approach in wound management seems logical. However, the literature has failed to clarify terms such as multidisciplinary, interdisciplinary and transdisciplinary. As a result of lack of consensus on terminology, healthcare providers are confused as to what this approach to wound care means.

Patient satisfaction is a key indicator for healthcare quality, and for many years, a measure of health outcomes. The main aim of measuring consumer perception of quality of healthcare services is to utilize these measures to enhance and improve the delivery of care and in the last 40 years, the many instruments used to measure patient satisfaction have evolved.¹⁴ According to others^{15(p.972)} "patient satisfaction is an individual's perception and evaluation of the care they receive in a health-care setting". According to the authors, it is very important to understand patient satisfaction because of its association with retention to care and medication adherence, which in turn impact the health and quality of life (QoL) of the patients. Patient satisfaction is an important component of patient-centered care, aimed at improving health outcomes by reducing the gaps between patient perceptions and healthcare needs.¹⁶

This study assessed patient satisfaction in a hospital setting. The overall objective of this research study was to determine the level of patient satisfaction with wound care services provided through interprofessional team approach.

MATERIALS AND METHODS

Design and Setting

To complete this research, a cross-sectional research design was chosen. Patients who received wound care services from an interprofessional team between January 2015 and March 2016 in the outpatient wound care clinic at Hamad General Hospital (HGH) in Doha, Qatar were asked to participate in the study. These patients were surveyed to determine their level of satisfaction with the wound care services received as they were delivered through an interprofessional team approach. HGH, located in Doha, Qatar, is a 600 bed inpatient adult tertiary

hospital that receives and treats about 40,000 patients annually. Of this large number of patients seen, 30% are admitted. The rest are treated as outpatients and discharged. In 2014, a total of 165 patients came to the HGH outpatient clinic to receive wound care services. This number was confirmed through the outpatient clinic patient registry.

As the wound care service maintains a service user registry of all patients treated in the outpatient wound care clinic for planning purposes, this registry was the ideal place to obtain contact information for potential participants for the research study. After obtaining consent from ethical boards and prior to starting the research, a letter asking permission to conduct the study, accompanied by a summary of the study protocols, was sent to the executives in charge at the outpatient wound clinic. A meeting was then held with the executives to further explain the purpose of the study and to answer questions regarding the research.

Ethical Approvals

Prior to starting this research, ethical approval was first sought from the University of Calgary Conjoint Health Research Ethics Board (Ethics ID: REB15-2811). A later amendment was obtained from the CHREB requesting that patient recruitment be done retrospectively through the wound care out-patient registry rather than asking patients to participate as they receive care at the clinic. Additional local ethical approval was equally sought and obtained from the Hamad Medical Corporation, Medical Research Center (Ref. No.: MRC/1457/2015).

Study Population

The study sample for this research was one of convenience. The convenience sample included all patients who have accessed wound care services from an interprofessional team approach at the Outpatient Wound Care Clinic at HGH between the time periods of January 2015 to March 2016. According to the patient registry at the Out Patient Wound Care Clinic, the complete patient sample of convenience could be as many as over 200 patients who have been treated at the clinic over this one year time period. The goal for sampling was to have as large a sample as possible for this data collection period.

Access to the patient registry to obtain contact information for the patients treated during the set time frame was coordinated through the head nurse for wound care at the Out Patient Clinic. Patients from the registry were called and asked if they would be willing to return to the wound care clinic to participate in a follow-up survey. Often the patients returned for treatment and the time of the survey was coordinated around the treatment times. When patients returned to the clinic, the researcher met with each patient to explain the purpose of the research and to invite the patient to participate in the study. An information letter about the study was provided at this time. The two ethical approval certificates were also available for presentation. Participants were invited to participate in the study and it was made

clear that their participation was voluntary. They were also informed that they could drop out of the study at any time without penalty.

Inclusion/Exclusion Criteria

Patients were required to speak and understand English as the survey was conducted in the English language. Patients who were unwilling or unable to participate, who were under 18 years of age and who did not have the required English language skills were excluded from the study.

Survey Instrument

Patient satisfaction was assessed using a CSQ-8.¹ Permission had been obtained from the developer to use the questionnaire for this study. The questionnaire had been used to measure satisfaction in numerous studies, some of which include: satisfaction with childbirth-related care among Filipino women¹⁷ satisfaction with hospital psychiatry services¹⁸ client satisfaction with psychotherapy,¹⁹ caregiver satisfaction with support services.²⁰ The CSQ-8 has a known reliability factor as measured by Cronbach's alpha coefficients, ranging from 0.83-0.93^{1,21} and a validity factor of 0.8 on average; a significant correlation with other instruments measuring satisfaction.²² Additional questions were added to gather background information about patients including causes of wound, referral sources and socio-demographic characteristics.

Data Collection

Data collection was completed over a period of 3 months from December 2015 to March 2016. The CSQ-8 was administered through face-to-face interviews with each participant who agreed to participate in the study. The questionnaire was completed under the direction of the researcher in a private room at the Wound Outpatient Clinic at HGH. Eligible participants were scheduled for a set time to come and complete the survey during clinic hours. If the participants were scheduled to receive wound care services, the time to complete the questionnaire was coordinated with this time. Three wound care nurses and a head nurse assisted in scheduling the participants. The researcher conducted the survey as she ensured the standard process of the actual gathering of factual information was consistent.

Patients who received wound care treatments were asked to voluntarily participate in the study. After obtaining a signed consent participants were provided with clear instructions on how to complete the CSQ-8 questionnaire. The researcher was available to assist the participants who needed interpretation of the questions or who had questions about the questionnaire.

It became very obvious at the beginning of data collection that only soliciting patients who came to the clinic for wound care services would not provide a sufficient sample group. It was observed that there was a very small number of current patients and the target population would not be achieved.

The decision was made to complete the data collection retrospectively from patients who had already received healthcare services at the clinic. As such, the researcher sought approval from the ethics boards to modify the data collection protocol. Once approved, patient contact information was traced from the clinic registry retrospectively.

Overall, 49.3% of study population were deemed ineligible to participate in the study and were then excluded. An additional 14.6% of eligible individuals were unable to come to the clinic to complete the questionnaire and as such, they did not participate in the study. At the completion of data collection 36.1% of the target population (N=219) participated in study. The total study population, those participants who completed the questionnaire was n=111.

Data Analysis

Data analysis was preceded by cleaning and verification of collected data to ensure a valid dataset for conducting analysis. Next, labels were assigned to response options for each CSQ-8 question. For example, question No. 1 on the CSQ-8 asks participants, “How would you rate the quality of service you received?” Response categories included 4-Excellent, 3-Good, 2-Fair, and 1-poor. The labels were assigned to each response option to facilitate interpretation of output from analysis. This process was repeated for all question items, making sure that the rank order was maintained. For example, question No. 8 on the CSQ-8 has four categories of responses including 1-No, definitely not; 2-No, I don’t think so; 3-Yes, I think so; 4-Yes, definitely. Though different in label and ordering sequence, the rank order is same for all questions on the CSQ-8 such that response option

1 is “less favorable” and response option 4 is “most favorable”. Previous studies have used varying methods to categorize CSQ-8 data using various cut off points for differing levels of satisfaction.²³ As the authors could find no such consistency in methods of presenting data they used percentages to present CSQ-8 scores by the 4 levels of satisfaction.

Data was analyzed using the Statistical Package for the Social Sciences (IBM SPSS Statistics 20). Data analyses involved descriptive statistics (means, standard deviation and frequencies) for all eight question items assessing satisfaction with wound care services, as well as to describe study sample by socio-demographic characteristics. Subsequently, *t*-tests were used to compare mean satisfaction scores for study variables. For each CSQ-8 item, mean differences between subgroups were deemed significant at the 0.05 level of significance. The findings were summarized and presented in Tables and Figures.

RESULTS

In total 81 of the 111 eligible participants responded to the survey, giving a response rate of 73.0%. The average age of respondents was 44.5 years. A majority of respondents were male (65.4%), born outside of Qatar (75.3%), married (70.4%), had a college or university degree (40.7%) and were employed (61.7%) (Table 1).

The results presented various levels of patient satisfaction with wound care services at HGH. In summary, all respondents (100%) rated the quality of service they received as “excellent” or “good” and a majority of respondents (98.8%) reported receiving the kinds of service they wanted. A majority

Table 1: Socio-Demographic Characteristics of Study Participants, Wound Care Service Users, HGH, Qatar, 2016

Variables	Frequency (%)
Age (years)	
Mean (SD)	44.5 (15.6)
Range	19-83
Gender	
Male	53 (65.4)
Place of birth	
Qatar	20 (24.7)
Outside Qatar	61 (75.3)
Marital status	
Single	19 (23.5)
Married	57 (70.4)
Divorced	3 (3.7)
Widowed	2 (2.5)
Level of education	
Primary or less	13 (16.0)
Secondary school	12 (14.8)
High school	23 (28.4)
College/university	33 (40.7)
Employment status	
Employed	50 (61.7)
Unemployed	17 (21.0)
Retired	12 (14.8)
No response	2 (2.5)

(98.8%) of respondents indicated that the services provided met “most” or “almost all” of their needs. Most of the respondents (98.8%) would recommend the services provided by the wound care unit to a friend that needed help and 96.3% indicated that they were “very satisfied” or “mostly satisfied” with the amount of help they received. All respondents (100%) reported that the services they received helped them “a great deal” or “somewhat” in dealing with their problems. As to overall satisfaction, 100% of respondents reported “very satisfied” or “mostly satisfied” with the services they received overall, general sense. Finally all respondents (100%) reported that they would return to the wound care service if they needed help again. Figure 1 is a detailed summary of all the responses to the CSQ-8 questionnaire, ranked from most favorable (4 highest rank) to least favorable (1 lowest rank) response, for each question.

ity ratings (percentage of responses attributed to rank 4 on the CSQ-8). The most favorable area of client satisfaction on the CSQ-8 was, “Have the services you received helped you to deal more effectively with your problems” with 90.1% of respondents reporting that, “Yes, they helped a great deal”. In contrast, the least favorable area of the CSQ-8 was, “Did you get the service you wanted?” with 67.9% of respondents indicating, “yes, definitely”.

A comparative analysis of patient satisfaction scores by subgroups did not portray relevant information worth reporting. However, Table 2 illustrates mean satisfactions scores for CSQ-8 by sex. No statistically significant differences between male and female in terms of reported satisfaction with wound care services at HGH. Nevertheless, a noticeable pattern emerged. Compared to women, men reported higher levels of satisfaction for CSQ Q1, Q2, and Q3; and lower levels for CSQ Q4 to Q8.

As shown in Figure 1, there are variations in favorabil-



Table 2: Comparison of CSQ-8 Satisfaction Scores by Sex, Wound Care Service Users, HGH Qatar, 2016.

CSQ-8	Sex	N	Mean	Std. dev	Mean Diff.	t-test for equality of means		
						t	df	p-value
Q1	Male	53	3.68	0.471	-0.024	-0.220	78	0.826
	Female	27	3.70	0.465				
Q2	Male	53	3.62	0.596	-0.081	-0.617	78	0.539
	Female	27	3.70	0.465				
Q3	Male	53	3.64	0.591	-0.247	-2.023	78	0.046
	Female	27	3.89	0.320				
Q4	Male	53	3.85	0.496	0.071	0.637	78	0.526
	Female	27	3.78	0.424				
Q5	Male	53	3.72	0.601	0.013	0.090	78	0.929
	Female	27	3.70	0.669				
Q6	Male	53	3.91	0.295	0.017	0.234	78	0.816
	Female	27	3.89	0.320				
Q7	Male	53	3.85	0.361	0.108	1.169	78	0.246
	Female	27	3.74	0.447				
Q8	Male	53	3.87	0.342	0.053	0.623	78	0.535
	Female	27	3.81	0.396				

DISCUSSION

This study examined patient satisfaction with wound care services in Qatar. The overall objective was to determine the level of patient satisfaction with an interprofessional approach to wound care service at the Outpatient Wound Care Clinic at the HGH.

Overall, findings from this study were very positive, with often high ratings of patient satisfaction. Though high, variations in favorability ratings emerged, suggesting there are still areas that need improvement, therefore cannot be ignored. The observed findings are comparable with other studies³⁻⁸, that found that employing a multidisciplinary team strategy in healthcare delivery can lead to improved outcomes for patients. Subgroup analyses of satisfaction levels revealed no differences worth reporting. This is a welcomed finding for a healthcare system that seeks to reduce inequities in healthcare services utilization, an important surrogate indicator for health system performance.

This study had a few limitations. It involved a convenience sample drawn from one of several hospital sites providing wound care services in Qatar. Thus, the findings have to be interpreted with caution as they may not totally reflect the situation at all sites providing wound care services. Second, the study used a cross sectional design where participants had to recall their experiences receiving care. This may subject some participant responses to recall bias. Third, the CSQ-8 used in this study was administered in English; and in some cases, the questions were read out to participants and their responses crossed out on the questionnaire. Though not all respondents needed help completing the questionnaire, socially desired responses might have been collected from others who received help.

CONCLUSION

This study is the first of its kind in Qatar to examine patient satisfaction with an interprofessional approach to wound care services in Qatar. The researcher encountered some difficulties with recruitment but did overcome them to complete data collection. Overall, results show that patients were mostly satisfied with wound care services and this can be improved. The strength of this proposed study is that study results could have major implications for Qatar, especially as there are known efforts to introduce interprofessional practice to other areas in Qatar. To date there is limited published literature on the advantages of interprofessional practice for patients living in Qatar and the Middle East.

The Qatar SHC has openly expressed support for innovations capable of helping to achieve its prescribed goal - to provide high quality healthcare of international standards in accordance with Qatar's National Vision 2030. Thus, this proposed study is timely, and its implications could be far reaching as the results will inform the design, implementation and adoption of

interprofessional practice in healthcare delivery as a way to improve patient care in Qatar. Building on the evidence from this study, more research can be generated to fill the knowledge gap on the subject especially in the Middle Eastern countries.

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CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest

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Review

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Measuring Health Services Utilization in Ethnic Populations: Ethnicity and Choice of Frameworks

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ABSTRACT

Background: Health services utilization (HSU) is an important health outcome indicator, a surrogate measure of access to healthcare, that influences the outcomes of health status and consumer satisfaction, is a surrogate measure of access to healthcare. To most healthcare providers, understanding patterns of HSU is important for health system resource planning and allocation. In studies of HSU, the ethnicity variable is key especially in multicultural societies such as Canada where a significant proportion of the population consists of visible minorities, who, often are referred to in research studies as ‘underserved’ or as ‘hard-to-reach’ in the sampling context.

Approach: This article discusses the relevance and utility of some frameworks for studying access to healthcare. It is intended to set the stage for a future study comprehensive systematic literature review of models of access to care and models of health system performance that address access as a criterion. To achieve this, I present selected published research on frameworks for access to medical care and HSU, including their characteristics and appropriateness for health services research. Subsequently, I briefly examine two studies that explore HSU, in Canada and the United States to determine the extent to which the selected framework or its components were employed. Finally, I describe ethnicity as a variable in the framework for HSU and conclude with limitations of this review.

Conclusions: This paper has highlighted the approaches to health services utilization and the application of the Aday-Andersen framework for studies on access to care. Although this paper draws on relevant and some important contributions in the field, the assessment presented here is not exhaustive and warrants a more comprehensive review that includes recent literature on the subject.

KEY WORDS: Methods; Health services; Access; Ethnicity; Frameworks.

ABBREVIATIONS: HSU: Health Service Utilization; CCHS: Canadian Community Health Survey; CHA: Canada Health Act.

INTRODUCTION

The Canada Health Act (CHA)¹ promises to facilitate reasonable access to health services without financial or other barriers. The use of health services is defined as the process of seeking professional healthcare and submitting oneself to the application of regular health services, with the purpose to prevent or treat health problems. Although, the decision to use health services is an individual choice, the choices are mostly framed in the social context through cultural, social and family ties; especially for ethnic minorities.² Health policy makers have an important role to ensure equal access to the healthcare system, with the ultimate outcome of improving the health condition of individuals, including hard-to-reach populations. Thus access may mean that services are available whenever and wherever the patient needs them and that the point of entry to the system is well defined.³

Unfortunately, there is no straightforward measure to operationalize this concept of

access to care. Health services utilization (HSU), is an important health outcome indicator that influences the outcomes of health status and consumer satisfaction, is a benchmark of health policy regarding “access”, and is a surrogate measure of access.⁴ Understanding patterns of HSU is important for planning purposes and for appropriate allocation of scarce resources in the community. This is of particular importance to ethnic populations; who in the service context are sometimes referred to as ‘underserved’⁵ or as ‘hard-to-reach’ in the sampling context.⁶ While a study of healthcare services utilization is important, it is worth noting, within a broader public health context that a consensus holds that among all the major determinants of a population’s health, access to and use of healthcare services contributes between 10-20%. Certainly, this is context-dependent but the relative importance of social determinants of health (e.g., income and social status, gender, education and literacy, social environment, personal health practices and coping skills, physical environment) and genetic factors should be more clearly acknowledged.

APPROACH

This article is a review of HSU frameworks to inform a survey of hard-to-reach populations in a Canadian province. It is intended to set the stage for a comprehensive systematic literature review of models of access to care and models of health system performance that address access as a criterion. To achieve this, I used selected published research to examine frameworks for access to medical care and HSU. I then describe their characteristics and appropriateness for health services research, and discuss the rationale for choosing a particular framework. Subsequently I briefly examine two studies that explore HSU in Canada and the United States to determine the extent to which the selected framework or its components were employed. Finally, I describe ethnicity as a variable in the framework for HSU and conclude with a summary response and limitations of this review.

DISCUSSION

Assessment of Frameworks for HSU

Given the intermittent link between health service use and access, studies of HSU are often framed using the concept of access to healthcare. There are multiple theories or frameworks of how access is structured. The empirical research that has been driven by these frameworks often suffer from a lack of consensus on what constitutes access. Two of the leading frameworks of access are those proposed by Aday and Andersen,⁷ and Penchansky and Thomas.⁸

Penchansky’s and Thomas’s⁸ framework for understanding access focused on the interaction of key elements that determine use of services. Fundamental to this framework is a suggestion of the concept of “fit” between the patient’s needs and the system’s ability to meet those needs; and that this fit could be measured across five dimensions⁸: (1) *availability* – the volume of physician and other healthcare services; (2) *accessibility* – which means the spatial or geographic relationship

between the providers of healthcare and the users of care; (3) *accommodation* – meaning the organization and content of the healthcare system as it relates to the ease with which people can use care (clinic hours, waiting time, and length of waiting time for an appointment); (4) *affordability* – the financial ability of the population to use the care provided by the system and perception of value on the part of patients; (5) *acceptability* – meaning the attitudes of the users of healthcare toward the providers, and *vice versa*. An inherent weakness of Penchansky’s and Thomas’s framework was the suggestion that ‘fit’ is a process of adjustment between the population and the healthcare delivery system; and the lack of a clear definition of terms (access, accessibility, availability) which are being used interchangeably.⁹

To improve the understanding of the concept of accessibility, Frenk⁹ proposed new definitions, referring to access – as the ability of a person to utilize healthcare given a need and/or desire to obtain it, while accessibility is the degree to which a person needing and seeking care actually receives care. Despite these alternative definitions, measures of ‘ability to utilize’ ‘need and/or desire to obtain’ care remain unclear. This limitation makes the Penchansky and Thomas framework less adapted for studies of HSU. However, the “fit” concept has been used in empirical studies for the development of indices for under service.¹⁰ This constitutes a strength as it might serve for designating and allocating resources to medically underserved areas rather than to describe health services use by hard-to-reach populations.

One of the most often cited frameworks for HSU in the population is what was originally called the “Behavioral Model of Health Services Use” developed by Andersen¹¹ and subsequently published with Aday as a “Framework for the Study of Access to Medical Care.”⁷ In developing the framework, Aday and Andersen took note of two key issues: 1) that earlier frameworks of use of healthcare focused on 2 major alternative dimensions - the characteristics of the population *versus* the characteristics of the delivery system; 2) it was the use of service and outcomes of the use process that could be used to measure access. With this in mind, they postulated that achieving change in health behavior (use of health services) depends on three primary determinants of health behavior including: 1) the characteristics of the health delivery system, 2) the population, and 3) the external environment.

The *characteristics of the health delivery system* are represented by resource factors (e.g. the invested labor and capital) and organizational factors (including both entry to the system such as waiting time and travel time, and passage through the system such as treatment received and who the patient sees). The *characteristic of the population* comprise predictors of healthcare utilization (i.e demand for services), and are categorized into classes of predisposing features (P), enabling features (E), and aspects of need (N); thus the reference ‘Aday-Andersen P-E-N model’ is often used in the literature.¹² Predisposing features include socio-demographic variables, such as age and gender; social structural factors, such ethnicity, socioeconomic position and education; and certain beliefs about

health. Enabling resources exist at the level of the community, such as the availability of health facilities (e.g., physician supply in the community), and at the level of the individual, such as the means and know-how to get to health facilities and the ability to pay for healthcare (income, health insurance). Need factors refer to the biologic imperative of disease, as evaluated by the professional (i.e., evaluated health), and the pain or symptom as experienced by the individual (e.g., perceived health).¹² The *external environmental factors* reflect the economic climate, relative wealth, politics, level of stress and violence, and the prevailing norms of society.^{7,13,14}

Key to the Aday and Andersen framework⁷ is its clarity on measures of HSU. The utilization of health services (intermediate outcome indicators) may be characterized in terms of its type, site, purpose, and the time interval involved.¹² Type may include services such as, hospital, physician, dentist, emergency care, home care; the site at which care was rendered (home, office, clinic, inpatient hospital, etc.), the purpose of the care received (preventive, curative, stabilizing, custodial), and the time interval involved (percent of population at risk who did and did not see a physician in a given time interval, mean number of visits to a physician in a given time interval), and continuity as measured by number of different providers contacted for a given episode of illness. Donabedian¹⁵ argues that measures of time interval for a visit should distinguish “initiation” and “continuation”, as they measure who gets into the system and how often they use it, respectively. This concept makes cross-sectional studies limiting for assessing HSU since they are carried out at one point in time.

Aday-Andersen Framework Versus Epidemiology

Compared to traditional medical epidemiology (primary focus on risk factors and behaviors), the Aday-Andersen framework⁷ includes social determinants of health and illness, and has translated the concept of “access” into a complex, multidimensional health policy measure. As a health policy measure, Andersen referred to “equitable access”, as occurring when demographic and need variables account for most of the variance in utilization¹¹; and “Inequitable access” when social structure (e.g., ethnicity), health beliefs, and enabling resources (e.g., income) determine who gets medical care”.¹⁴ In the context of Canada, The CHA¹, hopefully should ensure equitable access through its promise to facilitate reasonable access to health services without financial or other barriers.

Given the broad social context that the framework encompasses, it is particularly relevant to investigating issues regarding access among hard-to-reach (ethnic) populations, for whom, variation in health services utilization (e.g., hospital and cancer screening services) has been documented in Canada.¹⁶ Despite its wide spread use in health services research, the Aday-Andersen framework⁷ is merely a theoretical framework for analyzing the factors rather than providing a mathematical model with precise variables or providing precise methods to

be used. The choice of factors depends on the extent of prior research, the research question, the purpose of the study, and data availability.¹³

Assessing need for Health Services

Two approaches have been used to assess need for services in a population; the community based approach (survey) and the record based approach (registers, data linkage).¹² The community based approach is advantageous over the record based approach because in addition to estimating demand for services, it assesses need for those services in a population.¹² In this light, most empirical studies use data generated from surveys to make inferences on the populations’ use of health services. The Aday-Andersen framework has been used more often to guide research and evaluation studies on access and HSU than other approaches. In a special issue of *Health Services Research*, published in 1998 (www.pubmedcentral.nih.gov/tocrender), 139 papers used this framework between 1975 and 1995. That issue reviewed the development of the concept and its relationship to policy initiatives, and how access measures are operationalized in commonly used survey data. An assessment of that review is out of scope in this context.

Here I examine examples of empirical research that have indirectly applied the Aday-Andersen framework⁷ to investigate HSU in Canada and the United States. They include studies conducted by Quan et al¹⁶ using data from the 2001 Canadian Community Health Survey (CCHS), administered by Statistics Canada¹⁷; and another by Lasser et al¹⁸, involving data from Joint Canada/US Survey of Health,¹⁹ administered between November 2002 and March 2003 by Statistics Canada and the US National Center for Health Statistics. The first study assessed the use of health services by white and visible-minority populations in Canada. The second assessed health status, disease prevalence, behavioral risk factors, healthcare utilization, and access in both Canada and the United States. Characteristics of both studies included use of multi-stage complex sampling procedures, a cross-sectional survey, one time random telephone survey (land line only) of none institutionalized adults (very low income populations, who may be less likely to own telephones, may be under sampled). None of the authors made mention of a framework in the introduction and design sections (Quan et al¹⁶ cited Aday-Andersen under interpretation). This omission of framework is probably justified given the secondary nature of the data. Nevertheless, but for environment, the results of both studies highlight some of the important population and health behavior characteristics (Table 1) included in the Aday-Andersen framework. For convenience of interpretation, I group measures of HSU into indicators measures, such as physician and hospital use, preventive health services; and corresponding outcome measures including physician visits, mammograms. The indicators can be used as a set of measures of access which can allow populations to be compared (e.g., ethnic *versus* white as in Quan et al¹⁶), or may allow comparisons between countries (as in Lasser et al¹⁸). However, health policy decisions

Table 1: Indicators of Health Services Utilization in Population-Based Surveys.

Study	Use of health services		Population characteristics	
	Physician/Hospital	Preventive	Predisposing factors	Need factors
Quan et al ¹⁶ (Canada)	Visits/phone contact Hospital admissions	Pap smear Mammogram PSA	Age, sex, ethnicity, marital status, education, income, years in Canada, Language ability	Chronic conditions Health status
Lasser et al ¹⁸ (Canada&USA)	Physician contact Dentist year	Pap smear mammogram	Age, sex, race, foreign born, education, income, marital status	Chronic conditions Health Status

are usually country specific and the latter comparison maybe less useful in this context. The outcome measures used in both studies were particularly important in assessing HSU by type, site, and purpose.

While it is safe to say the analysis of HSU in both studies used cross-sectional surveys, the analysis tend to relate to discrete events where a person is in need of services, seeks them out and receives some form of care, advice, or therapy, and the outcome is measured. This is the premise of the Aday-Andersen framework.⁷ The findings from these studies demonstrated the dimensions of health services research and the potential influence on health policy decisions. For example, Quan et al¹⁶ found that use of health services varies considerably by ethnicity according to type of service; meanwhile Lasser et al¹⁸ showed that United States residents are less able to access care than are Canadians, and that universal coverage appears to reduce most disparities in access to care. This latter finding is useful at the macro level (e.g., the institutionalization of universal coverage at the national level in the case of Canada). Studies of HSU by hard-to-reach (ethnic) populations will require the application of the Aday-Andersen framework⁷ at the micro-level. This explains why factors other than environment, are often overlooked.

Ethnicity and Aday-Andersen Framework

Given that this paper focuses on identifying an appropriate framework to examine HSU in hard-to-reach (ethnic) populations, it is imperative to highlight specific aspects of ethnicity for consideration when applying the Aday-Andersen framework⁷ to studies of HSU among ethnic populations. Ethnicity is derived from a Greek word meaning a people or tribe.²¹ The concept of ethnicity is neither simple nor precise, but it implies one or more of the following: shared origins or social background; shared culture and traditions that are distinctive, maintained between generations, and lead to a sense of identity and group; and a common language or religious tradition.²⁰ The social variables that make up ethnicity may be important in determining differences in health status.²² For example, the appearance of a highly consistent pattern of differential mortality between races may be ascribed to environmental (that is, social), not genetic factors.²² Ethnicity covers two heterogeneous underlying factors, societal factors and cultural/ethnic factors. Societal factors refer to factors that are external to the individual and cultural/ethnic factors refer to individual-level behavior.^{22,23} Scheppers et al²⁴ have reviewed potential barriers to the use of health services among ethnic minorities. According to the review,

factors relating to ethnicity which are used to explain disparities in health and healthcare use include patient, healthcare systems, and provider level variables.²⁴

The process by which persons seek help is complicated, and there are typically large differences between populations with the same physical problems. Snowden and Yamada²⁵ highlighted numerous cultural differences in access to care. Kleinman²⁶ proposed that illness-related beliefs formed culturally influenced explanatory models, and that help-seeking tendencies logically followed. Mechanic²⁷ lists a range of determinants that affect the response to bodily deviations, and Leaf et al²⁸ explain that each of these determinants may differ widely among subgroups of the population and strongly affects the use of services. Armenian and Shapiro^{12(p.97)} conclude that “the challenge for the health services researcher conducting a community survey is to include sufficient detail on these processes to develop a compelling explanatory model for predicting services use”.

CONCLUSION

Numerous frameworks have been employed in studies of health services utilization. In this paper, I examine in greater detail, the Aday-Andersen framework and conclude that it is widely used and therefore most appropriate for use in studies to investigate health services utilization among hard-to-reach populations. This is due primarily to the following reasons:

Firstly, the fact that it goes beyond earlier frameworks that described population and individual characteristics, to suggest that it is the use of service and outcomes of the use process that could be used to measure access. Secondly, there is clarity in measures of health service utilization. Thirdly, compared to traditional epidemiology, the framework includes social determinants of health and illness, and has translated the concept of access into a health policy measure defining equitable access, as occurring when demographic and need variables account for most of the variance in utilization; and inequitable access, when social structure, health beliefs, and enabling resources determine who gets medical care.

Finally, the process by which persons seek help is complicated, and there are typically large differences between populations with the same physical problems. These differences can be cultural; may be related to differing help-seeking tendencies; may differ widely among subgroups of the population; and strongly affects the use of services. The Aday-Andersen frame-

work is merely a theoretical framework for analyzing the factors that influence health services utilization. Despite its use in empirical studies, it does not provide a mathematical model with precise variables or providing precise methods to be used. The choice of factors depends on the extent of prior research, the research question, the purpose of the study, and data availability. Thus, the health services researcher may consider including sufficient detail on processes affecting use of health services, to be able to develop a compelling model for predicting services use.

This paper has highlighted the approaches to health services research and the application of the Aday-Andersen framework for studies of health services utilization among hard-to-reach (ethnic) populations. The assessment presented here is not exhaustive but adds to the discourse on approaches for assessing population health, particularly hard-to-reach populations who, often are likely to be excluded from health research studies due to difficulties with sampling. Moreover, although this paper draws on relevant and some important contributions in the field, it did not incorporate most recent work. This constitutes a major delimitation but provides the rationale for a more comprehensive review in a future study.

CONFLICTS OF INTEREST

The author declares that there is no conflicts of interest

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Review

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Cupping Therapy: An Alternative Method of Treating Pain

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ABSTRACT

Cupping therapy is a form of Chinese medicine that is believed to act by correcting imbalances in the internal biofield. Cupping involves applying a heated or suction type cup to generate a partial vacuum that mobilizes the blood flow and promotes effective healing. Cupping therapy has gained popularity and acceptance as a method of treating pain as well as sports injuries and other medical conditions. This review outlines various tools and techniques of cupping therapy for the purpose of gaining greater understanding of this method of treatment.

KEY WORDS: Cupping therapy; Empty cupping; Moving cupping; Sports injury; Musculoskeletal condition; Adverse event.

INTRODUCTION

Since ancient times, complementary and alternative medicine (CAM) have played an important role in human health and welfare. Cupping therapy gets its name from the cups that are used to deliver the treatment. Cupping therapy mostly associated with Chinese medicine, is practiced world-wide and among different cultures to manage pain and other health problems.¹ Pain can be steady and constant with the patient feeling discomfort, distress and often agony if the severity is high.² Pain that can't be managed by traditional medical care, is the most common reason for seeking therapeutic alternatives to conventional medicine and the more severe the pain, the more frequent is the use of such therapies.¹ According to Journal of Traditional Chinese Medical Sciences, "nearly 80% of all visits to general practice involve at least one complaint directly related to pain, and 75% of Americans have experienced chronic or recurrent pain, costing \$200 billion annually".³ There are different descriptions of pain which can help relate as to what might be causing the pain. Pain can be classified physiologically as skeletal, neuropathic, or inflammatory; or be classified by type of tissue involved, such as skin, muscle, viscera, joint and bone; or related to disease/condition, such as cancer, fibromyalgia; or may reflect psychologic states, age, gender, and culture.³ According to the latest International Classification of Disease, pain is classified as either acute or chronic.³ In discussion with the patient, it is important to understand that pain is a very individual experience and perceptions of pain intensity can vary from individual to individual.²

Cupping is a technique that involves a plastic, glass, rubber, or bamboo cup. The cup is then used to create a vacuum on the skin over the target area.^{4,5} There are many types of cupping therapy, but eight types of cupping are used in clinical practice: empty cupping, moving cupping, retained cupping, needle cupping, moxa cupping, wet cupping, herbal cupping and water cupping.⁶ Cupping is generally safe when applied by trained professionals on people who are otherwise healthy. Cupping may result in bruising, burns, and/or skin infection. Cupping therapy adverse events can be divided into two adverse events: local and systemic.⁷ The local adverse events were scar formation, burn, skin infection, panniculitis, and abscess formation. Systemic adverse events include: anemia, dizziness, vasovagal attack insomnia, headaches, and nausea.^{6,7} Cupping therapy can last anywhere from 15 minutes to one hour. In this review, we will discuss the difference between two of the most common types of cupping, the dif-

ference in the equipment used for cupping, and the benefits of cupping. Keep in mind that cupping is often used as a symptomatic treatment for a wide range of conditions in clinical practice; however, its clinical effectiveness remains uncertain, and many clinicians are skeptical about its value.

HISTORY

In ancient times, tribal medicine practitioners utilized bamboo, bones, large nut shells, animal horns, seashells and gourds as suction devices to purge bites, infections and skin lesions from the body.⁴ Ancient healers even used this method on the body to draw out evil spirits. Depending on the type of equipment used to perform cupping, the vacuum is created by using heat or a mechanical pump. Cupping was thought to treat various medical conditions including its use to diminish headache, restore appetite and improve digestion, remove the tendency to faint, to draw 'matter' to the surface, increase secretions, promote menstrual flow, hasten the crisis of disease, remove too great a disposition to sleep and, if applied behind the ears, to produce a natural and refreshing repose.⁵ Cupping therapy has been used for over 2,000 years, by individuals without any medical background. There is reason to believe the practice dates from as early as 3000 BC.⁹ The Ebers Papyrus, written c. 1550 BC and one of the oldest medical textbooks in the Western world which describes the Egyptians' use of cupping, while mentioning similar practices employed by Saharan peoples.⁹ In ancient Greece, Hippocrates (c. 400 BC) used cupping for internal disease and structural problems.⁹ The method was highly recommended by Egyptians and Arabs, and hence well-practiced by Muslim scientist who elaborated and developed the method further.⁹ Consecutively, this method in its multiple forms spread into medicine throughout Asian and European civilizations. In China, the earliest use of cupping that is recorded is from the famous Taoist alchemist and herbalist, Ge Hong (281-341 A.D.).⁹ Cupping was also mentioned in Maimonides' book on health and was used within the Eastern European Jewish community.⁹

DISCUSSION

Is cupping therapy a passing sports fad? We've all seen various Olympic athletes with distinct "circles" on their body as a result of cupping therapy. To better understand the uses of cupping therapy and its benefits, we must explore how it works and the various methods of application.

Cupping therapy has been defined by the World Health Organization (WHO) as a therapeutic method using suction created by a vacuum.⁸ Cupping therapy has been shown to increase blood flow to the desired area, by causing rupture of capillaries on the skin surface.^{8,10} This is thought to increase blood flow to injured area and help in the healing process by bringing oxygenated blood and nutrients to the damaged tissue.⁶⁻⁸ Additional benefits from cupping therapy is pain relief from musculoskeletal conditions such as low back, neck and shoulder pain, pain from herpes zoster, hypertension, fibromyalgia, facial paralysis,

cervical spondylosis and stroke rehabilitation.⁶⁻⁸ Chi et al⁸ reviewed the effectiveness of cupping therapy on neck and shoulder pain. Their study utilized acupuncture points in cup placement and examined skin surface temperature differences using an infrared camera before, during and after cupping treatment. Their conclusions found that cupping provided an analgesic effect with little negative side effects and the treatment was easy to learn, easy to administer and patient outcomes were positive for pain relief.

Various Types and Methods of Application

Dry cupping is a method by which suction is created on specific points on the patient's body. Suction could be created by using heat to warm the cups so that the cooling air inside the cup creates a vacuum that tugs the skin upwards.^{8,10} Some methods are now using a combination of air pumps to remove the air out of the cup. In today's times, glass cups are used so that the therapist can monitor the condition of the skin.^{8,10} An alternative method of cupping used is medical grade silicone cups because of their pliability. This therapy can cause redness at the treatment area in addition to some amounts of swelling when the vacuum draws blood and fluids under the treatment space.¹⁰ In some cases dry cupping can cause bruising of the skin.⁹ At times, blisters might form and the healer will mistakenly tell you that this is an indication that the treatment has been effective in targeting the ailing section of the body.¹⁰ Dry cupping involves cups of various shapes including balls or bells, and may range in size from 1 to 3 inches across the opening.⁹ Various ingenious modifications of the plain glass cup were produced in the early 19th century.⁹ These include Fire Cupping, Acu-Point (Vacuum Cupping), Acucups (Massage Cupping), Myofascial Cupping, and Magnetic Cupping.⁵ It is important to understand that this therapy should not cause any pain, burns or blisters.⁸ Patients at most, might experience a "pinching sensation followed by a relaxed feeling".^{9,10} Dry cupping can be combined with other forms of treatment such as massage therapy, gliding cupping, water cupping, magnetic cupping and many more.¹⁰

Fire cupping involves soaking a cotton ball or cloth swab in a flammable liquid, oil or alcohol. The cotton ball or swab is clamped by a pair of forceps and lit *via* match or lighter, and, in one motion, placed into the cup and quickly removed, while the cup is placed on the skin.⁸ Fire heats the inside of the cup and a small amount of suction is created by the air cooling down again and contracting. Massage oil may be applied to create a better seal as well as allow the cups to glide over muscle groups in an act called "moving cupping".⁸ A problem involving fire cupping is there are documented cases of burns, ruptured capillaries just under the treatment area resulting in "dark circles".⁸ Fire cupping's most potent impact by far is its tried-and-true ability to optimize circulation. Increased blood flow to all areas of your body provides a number of important health improvements, such as: open the chest and lungs, alleviate menstrual cramps, diminish digestive problems, clear up coughs, wheezing and other respiratory problems, halt migraines, and

manage acute and chronic pain.¹¹ So while fire cupping is a great one-time treatment for many common conditions it's also said to assist in maintaining your overall health. It is speculated that along with proper nutrition and exercise, cupping offers a relaxing means of keeping yourself healthy, and can be performed on a monthly basis, or as a complement to other detoxification programs.¹¹

Myofascial cupping is directed at the muscular and skeletal system of the body.¹² This form of therapy uses mechanical suction equipment to create the required vacuum. A cup or a cylinder is attached to a hand operated suction pump and this cup is applied on the skin and utilizes the same technique used in vacuum therapy.¹² The therapist may first massage the patient's body to locate the areas that need treatment and apply herbal oils or cream on the skin before attaching the cup. Depending on the area to be treated, cup size is selected according to the area to be treated and most treatments include two or more cups applied at the same time.¹² For example, a upper back or low back area may have four large cups applied, while a shoulder or thigh may have two to four smaller sized cups.¹² Typically, there is minimal bruising that dissipates in a few days' time. The patient should not experience any pain. Myofascial cupping increases circulation which attracts blood to the affected area that brings the essential nutrients to assist in healing.¹² If there is any blockage and accumulation of fluids, it is released. This form of therapy works very effectively in case of patients that cannot undergo acupuncture treatment and can also be used to perform massage therapy.¹² Myofascial cupping is used to relieve any injuries received when playing sports. Patients with musculoskeletal related conditions will find that this therapy is very effective, especially back and neck pain, sprained muscles, strained tissues and other such problems can be alleviated with the use of myofascial cupping.¹²

Vacuum cupping therapy also known as "air cupping" eliminates the use of fire and heat completely. In this form of healing, a pump is attached to the top of the cup and vacuum is created by pumping the air out of the cup.¹² The therapist cleans and sterilizes the targeted area on the patient's body and applies herbal oils or skin cream for lubrication. Next the equipment is prepared by washing it with warm water and dish soap. The appropriate sized cups are then placed on the patient's body and suction is caused by pumping the air out.¹² The mechanism uses a connector which links the cup to the pump that sucks the air out creating a vacuum. Once the vacuum is created, the valve on the top of the cup is closed and the connector and pump are removed.¹² Another advantage to this type of cup is that it contains a therapy stick that has a small ball on the end of it. This ball has a diameter of approximately a few millimeters. This purpose of this therapy stick is to provide access to use in acupoint therapy.¹³ Acu-point therapy is an extension of "akupunkt" massage which was created by Willy Penzel¹³ and is a part of his modern technology. Acu-point therapy allows for the stimulation of a variety of acupuncture points not with needles but by way of a therapy stick.¹³ The main goal of acu-point therapy is

to bring the two nervous systems, the parasympathetic and the sympathetic to a point where they can be in balance as well as perfect harmony with one another.¹⁴ It works by way of vasodilation which then causes the stimulation.¹⁴ This is a very common and popular type of cupping because there is no flame needed to create the vacuum and the administrator has complete control over the amount of suction.

Massage cupping employs suction to tug the skin and tissue upward in the vacuumed cup, which is similar to massage techniques such as kneading and effleurage in typical massage treatment, but instead use exerting downward compression on the muscles.¹⁵ According to Stavrou et al¹⁶ "the suction of the cups rapidly facilitates rigid soft tissue release by stretching it up from underlying structures, thus loosening areas of adhesion or restriction, activating muscle spindle reflexes that relax contractile tissue and retraining the myofascial structures". Locating the points and sections of the body that need to be treated is essential to the cupping application.⁸⁻¹⁰ A light oil is applied on the area where suction is to be created. Depending on the location of the treatment area, the therapist uses (medical grade) silicone cups that are available in different sizes.¹⁵ Silicone cups are pliable so they are easy to move over the body and their transparency allows the therapist to monitor the condition of the skin. Skin color is a good indicator of the effectiveness of the treatment so the therapist can make adjustments accordingly. If the skin is white or a light pink in color, this indicates that only slight suction is needed. Vibration, shaking and friction may be used to affect the treatment area. If the therapist notices that the skin is a darker shade of color following treatment, this may indicate the presence of inflammation and congestion in the area. Thus, three techniques are used to drain the excessive fluids such as pumping, rolling, rotation and parking.¹⁵ The therapist then creates suction in the cup. The therapist allows the cup to stay in the place for a few minutes so that the muscles are stretched and relaxed. The cup is gently moved over the skin in smooth massaging motions so that the vacuum raises the skin and tissues. On certain sections where there is excessive stagnation or inflammation, the cups could drag a little or resist movement assisting the therapist identify the areas that need special care.¹⁵ This type of therapy was thought to cure a wide range of ailments such as fibromyalgia, hypertension, muscle pain and herpes zoster.⁸ There is some documentation that acne, cervical spondylosis were treated using cupping therapy.^{6,8} Massage cupping can be used to treat ailments like stiff muscles, stress, migraines, fatigue and exhaustion, back and neck pain. It can also be used in rheumatism, weight loss and cellulite reduction treatments.¹⁵ When the therapist exerts suction on the different points on the body by way of massage suction, certain changes are brought about up to four inches inside the body.¹⁵ Some of the therapeutic effects of massage cupping include increased blood flow to the treated area, increase oxygen and nutrients to the cellular tissue, relaxing of tight muscle, and breaking up of adhesions and knots in the muscles.¹⁵ There are also claims that the peripheral nervous system in the treatment area benefits from this form of treatment.¹⁵ In contemporary times, massage cupping is

seen as an effective, non-invasive, inexpensive, and safe form of treatment that can be used by itself or in combination with other forms of therapeutic approaches.¹⁵ Because of its versatility, it is being used in physical therapy, chiropractic settings, and in spa treatments. The massage cupping has been found to be safe to use and can be performed on patients of all ages including kids, adults and elderly people.¹⁵ It is also found to be a highly effective form of therapy because it allows the therapist to heal the deeper tissues in the body without causing any discomfort to the patient.¹⁵

Magnets when combined with the healing effects of cupping therapy have shown to be beneficial for patients' outcomes.¹² The magnets are known to have positive effects on the body since they can induce the movement of electric currents through the body.¹² These currents aid in the blood circulation in the body and since blood carries oxygen-rich nutrients to different parts of the body, magnets can assist in the healing of many ailments. The therapist begins by applying soothing oils or creams on the patient's skin. The mechanism used for magnetic cupping is similar to massage cupping and mechanical pumps in the sense they are used to create suction. Except in this case, a small cylindrical magnet is fitted to the bottom of the cup.¹² When a vacuum is created inside the inverted cup, the skin rises and comes in contact with the magnet. Since the magnet is set to target specific points on the patient's body, it is also a form of acupressure, and provides the benefits of both cupping therapy and acupressure.¹² As per the needs of the patient, the therapist might place more than one or two cups on the skin simultaneously. Treatments vary from 15-20 minutes, and upon completion, there may be some residual redness and circles on the skin from the cups, but these marks typically disappear over time.¹²

Early practitioners favored wet cupping to treat ailments with Europeans using this method the most.⁶⁻⁸ However, there are other parts of the world that may practice this cupping technique. Wet cupping is a form of blood-letting.^{6,17} Traditionally this was achieved by burning incense or a swab on the inside top of the cup to heat the air inside for about two seconds.¹⁷ This increased the inside temperature of the cup, with the cup placed on the skin with one edge raised about one and a half inches.⁵ This created a vacuum which would suck the glass from the operator's fingers. The skin would rise slowly into the glass.⁵ The cup would be kept in place for one minute, then removed and its lancets (usually a scalpel) lightly penetrated through the skin. The glass was then immediately reapplied so the vacuum would cause blood to flow into the heated cup.⁵ Today this treatment involves lacerating the skin and placing a glass cup against the skin and then creating a partial vacuum in the cup in order to suck blood into the vacuumed cup.¹⁷ In ancient years, wet cupping was thought to expel heat, treat high fever, loss of consciousness, convulsion, pain, local areas of inflammation, and to remove "stagnant blood."^{5,17} Today wet cupping is used for the purpose of low back pain, muscle pain, joint pain, fatigue, and headaches.¹⁷ This type of cupping is also used to expel unnamed toxins, increase blood flow, or activate the immune system.¹⁷ In

this procedure up to 20 ounces of blood can be withdrawn at a time from a local site, using 5 cups and obtaining 4 ounces per cup. Wet cupping is a complex procedure requiring extreme care to provide a sterile environment because of the lancing of the skin to produce blood flow into the vacuum.⁵ In addition, the therapist administering the treatment needs to guard against exposure to blood-borne pathogens. Wet cupping is generally performed only by a few experienced practitioners.⁵

CONCLUSION

Cupping therapy has its benefits in the treatment of various medical conditions. With the many forms of cupping therapy the clinician should review the literature and make their selection of cupping method based on treatment studies. Although, discussed as a traditional form of Chinese medicine, it has gained wider acceptance, especially in the treatment of sports injuries. Cupping therapy in its various forms will continue to be used due not just to its popularity, but because it is beneficial to treating patients pain and other medical conditions.

AUTHORS CONTRIBUTIONS

All authors have contributed to the data collection and writing of this manuscript.

CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

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Short Communication

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Epidemiology of Premature Ejaculation and its Impact on Quality of Life

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ABSTRACT

Premature ejaculation (PE) is one of the major sexual problem among men. The prevalence varies worldwide ranging from 4 to 66% according to various studies. The aetiology and pathophysiology of PE are still poorly understood. The associated risk factors for PE varies from folate deficiency, metabolic syndrome/diabetes, neurobiological and genetic factors/genetic predisposition, neurological disorders, recreational drugs and alcohol, chronic prostatitis/chronic pelvic pain syndrome, thyroid disorder, emotional problem/depression/stress/anxiety, history of traumatic sexual experiences/conditioning, erectile dysfunction (ED), low sexual intercourse frequency. PE has a great impact on the men's quality of life (QoL) where it can lead to embarrassment, frustration, feeling of incompetence, depression and sexual dissatisfaction. The management of PE varies from non-pharmacological therapy including counselling; and pharmacological therapy. PE does not just affect the man but also his female partner. As such, it is important that women understand the issue and provide adequate moral support to the male partner to address the issue together.

KEY WORDS: Premature ejaculation (PE); Risk factors; Prevalence; Quality of life (QoL); Management.

ABBREVIATIONS: PE: Premature Ejaculation; GSSAB: Global Study of Sexual Attitudes and Behaviors; TBI: Traumatic Brain Injury; IELT: Intravaginal Ejaculation Latency Time; IIEF-5: International Index of Erectile Function-5; TSH: Thyroid Stimulating Hormone; DE: Delayed Ejaculation; ED: Erectile Dysfunction; EF: Erectile Function.

INTRODUCTION

Premature ejaculation (PE) is defined as ejaculation which always or nearly always occurs prior to or within about one minute of vaginal penetration from the first sexual experience (lifelong premature ejaculation), OR, a clinically significant and bothersome reduction in latency time, often to about three minutes or less (acquired premature ejaculation); AND the inability to delay ejaculation on all or nearly all vaginal penetrations; AND negative personal consequences, such as distress, bother, frustration and/or the avoidance of sexual intimacy.¹

The prevalence of PE varies worldwide and it is estimated to be vary from 1%-30%. The Global Study of Sexual Attitudes and Behaviors (GSSAB) which is a large survey on prevalence of sexual dysfunction in 29 countries indicated that rapid ejaculation is the main complaint. It was found that the prevalence of rapid ejaculation were more than 20% in Europe, South America and Asia.²

The prevalence could be higher as many men do not want to seek help or discuss the problem which may affect their self-esteem.^{3,4} Recently, a standardization on the evidence-based definition was done for PE and a set of operational criteria was established in 2014.⁵ Prior to this definition, the prevalence rates of PE were found to vary ranging from 3% to 84%.^{5,6} The new definition of PE is attempt to overcome the prevalence rates disparity amongst the existing studies.

RISK FACTORS OF PREMATURE EJACULATION (PE)**Biological Causes**

The aetiology and pathophysiology of PE are poorly understood. Among the risk factors are genetic predisposition, obesity, depression, stress, anxiety, traumatic experiences, recreational drugs and alcohol, prostatitis, neurological causes, thyroid disorders, varicocele, erectile dysfunction, relationship problem, early sexual experience, sexual abuse.

Folate Deficiency

Studies have indicated that there is a correlation between serum folic acid and International Index of Erectile Function-5 (IIEF-5) scores ($r=0.589$, $p<0.01$) and intravaginal ejaculation latency time (IELT) ($r=0.445$, $p<0.01$) and this was due to the effect of folic acid on the nitric oxide metabolism, 5-hydroxytryptamine, Hcys.⁷ In another study, it was found that the concentration of folic acid and IELT in the PE group was significantly lower than the normal group and the concentration of folic acid was moderately correlated with IELT ($r=0.494$, $p<0.05$).⁸

Neurobiological and Genetic Factors/Genetic Predisposition

In 1998, it was suggested that men with lifelong PE, their IELT is affected by genetic and neurobiological factors. There is no real concrete evidence to suggest that the first-degree relative of a man with lifelong PE is a risk factor for PE although familial occurrence of PE has been proposed in 1943 and even investigated in a family study in 1998.⁹

Metabolic Syndrome/Diabetes

Studies have shown that there is an association between metabolic syndrome and PE. Bolat et al¹⁰ found that metabolic syndrome components were found significantly predictive of PE after controlling for age and total testosterone.

PE is significantly associated with diabetes where men with PE has higher fasting blood glucose than the men without PE. Higher prevalence of PE was noted in men with diabetes.¹¹ Similarly, the PE incidence were reported high among diabetics. The associations between PE and diabetes may be due to neurologic, neurotransmitter and psychologic dysfunctions.¹²

The microvascular complications such as diabetic neuropathy from diabetes may contribute to PE where the ejaculation largely depend on autonomous nervous system, its central, and peripheral neurotransmitters.¹³ The impairment of nitric oxide metabolism, inhibited serotonergic activity and activated adrenergic system may contribute to the ejaculation reduction time.¹⁴

Visceral obesity, high plasma leptin concentrations, insulin resistance, baroreflex impairment, activation of the RAAS

(renin–angiotensin–aldosterone system), and the oxidative stress on sympathetic nervous system may lead to overactivity and increasing of blood pressure which may lead to increment of blood pressure in the prostatic urethra of the PE subjects.¹⁵

Neurological Disorders

Some studies have indicated that there is a possibility of association between neurological disorders and PE. Some of the neurological disorders such as multiple sclerosis, cerebrovascular disease, traumatic brain injury (TBI), Parkinson's disease etc., were found to be associated or linked to PE. Nevertheless, there was a lack in findings on the strength of association of these neurological disorders. The effect could be from the neurophysiologic mechanisms or by endocrine, metabolic or psychological changes.¹⁶

Recreational Drugs and Alcohol

Illegal recreational drugs such as amphetamines and cocaine are found to be associated with PE. Subjects who used amphetamine can have prolonged IELT or shortened IELT.¹⁷

Most studies have found no association between alcohol consumption and PE. However, fewer studies have shown an association between alcohol and PE. PE was reported in 37.5% subjects (36/96). From this number, 27 (28.12%) experienced ejaculation within 60 seconds.¹⁸ In another study, PE was found to be 4%.¹⁹

Chronic Prostatitis/Chronic Pelvic Pain Syndrome

Prostate inflammation/chronic bacterial prostatitis were more commonly found in men with PE.²⁰ Studies have shown that there is a relationship between PE and chronic prostatitis/chronic pelvic pain syndrome. For chronic prostatitis, there is a correlation between prostatitis pain score and PE in crude analysis and after adjusted for metabolic syndrome status, testosterone level, IIEF score and age. Likewise for chronic pelvic pain, the odds ratio (OR) for PE is significantly increased in relation to the severity of pelvic pain in crude and adjusted analysis.²¹

Thyroid Disorder

Studies have shown there is a correlation between serum thyroid stimulating hormone (TSH) and IELT in patients with hyperthyroidism. Following hyperthyroidism treatment, there were significant improvement in IELT once the patients achieved euthyroidism.²²

Thyroid disorder were found to be associated with delayed ejaculation (DE), sexual desire, PE and erectile dysfunction (ED). In a study by Carani et al., 2005 in hyperthyroid men; DE, sexual desire (libido), ED and PE were 2.9%, 17.6%, 14.7%, and 50%, while in hypothyroid men, the prevalence of sexual desire (libido), DE, and ED were 64.3% while PE was

7.1%.²³ In hyperthyroid subjects, after normalization of thyroid hormone, the PE prevalence was reduced from 50 to 15%, and improvement in erectile function (EF) and intercourse satisfaction (IS). In hypothyroid men, improvement were seen in EF, libido, intercourse satisfaction but decline in IELT.

Emotional Problem/Depression/Stress/Anxiety

Depression is associated with PE duration.²⁴ Psychological factors which were derived due to the complications of diabetes and its treatment effect may also contribute to performance anxiety which lead to PE. Generalized clinical anxiety was found to be predictive to PE.²⁵ Knowing the difficulties in achieving erection due to diabetes, the person may quickly complete the task by having a quick intercourse.

History of Traumatic Sexual Experiences/Conditioning

Frequent masturbating, improper masturbation and learning how to ejaculate quickly to avoid from being caught masturbating by family members/friends may lead to PE. Apart from that, the individual who achieved climax in a non-ideal condition such as not using any form of lubricant when masturbating to achieve climax, rubbing on the pillow/bed sheet/female undergarments will alleviate the sensitivity of the skin when the individual is having sexual intercourse with his partner where the moisture environment in the vagina will lead to fast ejaculation.

Erectile Dysfunction

Men who are anxious and worry of maintaining an erection during coital, may quickly rush to ejaculate. This habit which is difficult to change if continue will lead to PE. It was noted that men with PE is also associated with an increase risk in ED. In men with PE, the risk of getting ED is higher in older individuals, lower education level and unstable relationship.

Few studies have confirmed that ED and PE are reciprocal. When a man attempt to achieve an erection *via* excitation, it may lead to PE.^{26,27} Likewise, when men trying to control his ejaculation, it will reduce the excitation which can lead to ED.

Low Sexual Intercourse Frequency

Men who suffered PE have lowered frequency of sexual intercourse.^{28,29} Men who have low frequencies of sexual activity tend to get more excited and aroused, which leads to performance anxiety. Some studies previously postulated that low frequency of sexual intercourse resulted men unable to practice to control their ejaculation.³⁰

Impact of PE on Quality of Life

Some studies have shown anxiety is increase in men with PE especially anxiety which is related to sexual relations.^{31,32} Anxiety may have bilateral relationship with PE where anxiety may

had contributed to PE or PE causes the increase in anxiety. Self-esteem and self-image may have been affected in men with PE.

Most men would like to achieve long duration of ejaculatory control and many attain sexual satisfaction achievements if they are able to drive their partner to achieve orgasm *via* vaginal penetration.³³

PE can have deleterious effects on men such as embarrassment, frustration, feeling of incompetence, etc.³⁴ Most men are embarrassed by their PE condition and prefer not to talk about it. PE can pose detrimental impact on a men's life and his relationships with his partner. The men can feel inadequate, depressed, anxious, angry, have low self-esteem and will eventually lead to marital problem.

Studies have shown that men who suffer PE tend to have lower intimacy levels compare to those men without PE. There is a lack of intimacy between the couple when the man suffers from PE. It affects the emotion, intellectual and social aspects of their life.³⁵ Studies have shown that men with PE have dissatisfaction during sexual intercourse and suffer personal distress and have interpersonal difficulty.³⁶⁻³⁸

PE can have a huge impact on the couple. The man may feel tensed and unable to enjoy intercourse, he becomes jealous and feels useless, has decreased interest in sex, and feels unsatisfied with his sexual life and his sexual relationship with the partner. All this leads to frustration and disappointment and the female partner may feel equally frustrated and sexually dissatisfied (low sexual satisfaction). This feeling of sexual dissatisfaction can be detrimental to their relationship as it can lead to strain in the relationship and eventually lead to separation. In order to avoid humiliation and/or embarrassment for not being able to satisfy their partner, some men would breakup with their partners or not proceed with their current relationship.³²

PE not only contributes to the sexual dissatisfaction but also to overall sexual function such as less orgasm enjoyment and difficulties of getting aroused. However, in some men, although PE contributing to the diminished sexual satisfaction, nevertheless, they are satisfied and happy with their current overall relationship with their partner, as this inadequacy has little or no impact on their self-esteem and quality of life (QoL). Likewise, they are not appear to be affected.

PE has a greater negative impact than ED. ED is perceived by some women as a medical problem and it is not the men's fault. In the end, both of them are unable to enjoy sex. On the other hand, PE is perceived as being selfish because the man is able to penetrate the partner and reach his climax (ejaculation) where else the woman, is unable to enjoy it.³³

The role of a woman in dealing with PE is important. Some women may understand of the men condition, commu-

nicate with the partner to seek treatment while some may feel frustrated and angry. It is important for the women to understand her partner and try to help her partner as much as she can.

Men may perceive that women always want or wish to achieve orgasm through sexual intercourse. But the women may think reaching orgasm or not via penetration is unimportant because there are other ways to achieve sexual satisfaction. In other words for some women, sex through penetration is not the only way to attain sexual satisfaction. Hugging, kissing, touching, stroking etc., can help some women reach the climax. If the female partner insists on having satisfaction or achieving climax/orgasm only via penetration, the male partner can perform the next sexual intercourse after an hour or two following the first 'unsuccessful' attempt. Usually IELT would be prolonged during the second attempt.

Treatment for PE

If PE is due to medical condition, treatment has to be focussed on improving the underlying medical condition such as angina or erectile dysfunction (ED). Men suffering from PE should consult with psychiatrist or sex therapist if the underlying factors are found to be psychogenic and seek help from a urologist or primary care physician if it is due to physical factors.

The management of PE can be categorised into non-pharmacological therapy and pharmacological therapy. Non-pharmacological therapy includes the behavioural therapy 'stop-start strategy' (Master and Johnson technique),³⁹ reducing the performance pressure on the male partner, attempting second time sexual intercourse, psychotherapy (psychosexual therapy and relationship counselling).

The pharmacotherapy on the other hand, includes SSRIs (fluoxetine, fluvoxamine, paroxetine, sertraline),⁴⁰ escitalopram,⁴¹ citalopram,⁴² dapoxetine⁴³; tricyclic antidepressants (clomipramine)⁴⁴; phosphodiesterase type 5 (PDE 5) inhibitor (sildenafil,⁴⁵ vardenafil,⁴⁶ tadalafil⁴⁷), desensitizing agents/local anaesthetic agents such as SS Cream,⁴⁸ benzocaine,⁴⁹ prilocaine-lidocaine cream⁵⁰ and opioid analgesic (tramadol).⁵¹ Alpha-blockers such as terazosin is also found to be effective for PE treatment in patients with lower urinary tract symptoms (LUTS).⁵²

CONCLUSION

In conclusion, PE is a serious male sexual dysfunction apart from ED. There are many men who suffer this condition in silence and many cases are still unreported. It affects all age group whether young or old. PE does matter to men because it causes men to be unhappy, depressed and frustrated. PE not only affects men but also to their partner as well. Men should seek counselling and treatment for their PE as there are medical treatment available which can help to overcome the problem. At the same time, the female partner needs to understand and help her partner

by providing the necessary moral support.

CONFLICTS OF INTEREST

The author declare no conflicts of interest.

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