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Systematic Review



Prevalence of Chronic Pelvic Pain Among Women: An Updated Review

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Background: Chronic pelvic pain (CPP), defined as a noncyclical pain lasting for more than 6 months can lead to lower physical performance and quality of life in women. CPP is a worldwide problem affecting women of all ages. However, health care professionals and researchers, due to its complex nature and the lack of knowledge surrounding the condition, frequently neglect CPP. Subsequently, basic data and knowledge regarding CPP remain incomplete.

Objective: To update the review of the worldwide estimation of the CPP prevalence considering the World Health Organization systematic review by Latthe et al in 2006 as point of departure.

Study Design: A systematic review of CPP prevalence studies.

Method: Electronic search was performed to find related articles through PubMed between 2005 and 2012 based on the PRISMA statement (2009).

Results: From 140 studies, only 7 studies were about CPP prevalence. Their study design consisted of 3 cross sectional studies, one population based mailing questionnaire study, one survey study (computer assisted telephone interview), one data analysis by questionnaire, and one prospective community based study.

Limitations: Paucity of population based studies in addition to probability of existence of studies at the local level with limited access to worldwide databases, lack of consensus about definition of CPP among researchers and therapists, and non-inclusion of CPP related key words in databases such as PubMed.

Conclusion: Based on these articles, prevalence in general ranged between 5.7% and 26.6%. There were many countries and regions without basic data in the field of CPP. This review shows the paucity of studies, especially multidisciplinary researches with multifactorial views on CPP. Multidisciplinary studies would provide more reliable data for estimating the prevalence of CPP and its psycho-socioeconomic burden, as well as finding its etiologies and characteristics. This would be the first step towards better treatment and care for women with CPP.

Key words: Chronic pelvic pain, women, epidemiology, prevalence, human, female

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The Royal College of Obstetricians and Gynecologists defined chronic pelvic pain (CPP) as “intermittent or constant pain in the lower abdomen or pelvis of at least 6 months duration, not occurring exclusively with menstruation or intercourse and not associated with pregnancy” (1).

Another definition of CPP by the American College of Obstetricians and Gynecologists is “noncyclical pain of at least 6 months’ duration that appears in locations such as the pelvis, anterior abdominal wall, lower back, or buttocks, and that is serious enough to cause disability or lead to medical care” (2).

CPP prevalence is comparable with global prevalence of asthma (4.3% – 8.6%) (3) and one month prevalence of low back pain ($23.2 \pm 2.9\%$) (4). The prevalence for women in reproductive ages is between 14% – 24% (5) and about 14% of women experience CPP at least for one time during their life (6).

A number of concomitant psychological and physical disorders have been seen with CPP. The most prevalent psychological disorders among these women are depression (25% – 50%), anxiety (10% – 20%), multi-psychological disorders (20% – 30%), and somatic disorders (10% – 20%) (7). For Brazil, the prevalence of anxiety was 73% and depression was 40% (5). In the United Kingdom (UK), 31% of women with CPP had shown anxiety (8). Disturbed physical and mental health and sleep quality was reported by 32% of those women (9). Women with CPP have specific pain, movement and posture patterns, pathology in muscles, and decreased body awareness that differ from healthy women (8). Effects of CPP and its causes on daily activities were reported among 50% – 60% of women (9,10).

The economic burden of pain management in the United States (US) has been estimated at about \$100 billion with \$4 billion for headache alleviators and more than 48 million Americans with chronic pain (11). For CPP about \$881.5 million was spent as direct health care cost each year in the US (1,12,13) and overall cost (sum of direct costs such as out of pocket payment and indirect costs such as those related to work absenteeism) is about \$2 billion (13). Two economic aspects of women's lives that are affected by CPP include repeated absence from work between 13% and 32% (1,9,10) and decreased fertility of between 45% and 64% (1,10,11) that costs about \$65 billion (1,11). But there are other economic aspects that should be considered in estimating the economic burden of CPP, including costs of women's decreasing ability to play their roles as mother and wife and costs for their family (1). Medication consumption and gynecological surgeries of women with CPP are 3 times and 4 times (respectively) higher, compared to women who are healthy (8).

There are also many challenges for the health care system to deal with in regards to CPP. The burden of chronic pain in the US among the 50 million affected is \$70 billion each year on health care and more than 80% of referrals to physicians (14). On the other hand, the CPP consulting rate for physicians in primary care services was 15% (15) and only 40% of women with CPP are referred to specialists for further investigation and consultation (12,15). In the UK 38 women per 1000

(1,8,9) use primary care for CPP. About 20% to 70% of women had an improper diagnosis (16). The time gap between the beginning symptoms of endometriosis and diagnosis for Norwegian women was 6.7 ± 6.2 years and for Anglo-American women was 3 – 11 years (17).

The WHO Systematic Review of CPP Prevalence in 2006

In 2006, Latthe et al (18) published their systematic review estimating the worldwide prevalence of non-cyclical pelvic pain, dysmenorrhea, and dyspareunia by reviewing related articles until 2004. In their article, the worldwide prevalence of noncyclical pelvic pain was 4% to 43.4% and 3 months prevalence of CPP in the US among women 18 to 50 years old was 15% and in the UK among women 12 to 70 years old it was 24%. The CPP prevalence rate for India, Thailand, and Pakistan was 5.2%, 43.2%, and 8.8%, respectively. Their estimation of CPP prevalence was concluded from 7/18 population based studies, 9/18 health center based studies, and 2/18 studies on specific groups of workers.

Finally, they concluded that worldwide variation in estimation of CPP prevalence and its burden depended on the existence and quality of studies. In addition, there was a paucity of population-based studies especially in less developed countries and subsequently uncertainty about the burden of CPP. Therefore, they believed that if we have reliable information and data we would be able to show the burden of CPP for that population (18).

This review will try to give an estimation of the CPP (noncyclic pelvic pain type) prevalence and show the amount of knowledge added to this field after the WHO systematic review by Latthe et al in 2006 (18) through a systematic search in the database.

METHODS

The search strategy in this review was based on the PRISMA (Preferred Reporting Items for Systematics reviews and Meta-Analyses) statement (2009). This strategy is a revision of QUOROM (Quality Of Reporting of Meta-analyses) statement that used to report both systematic reviews and meta-analyses (19). For author, this guideline had comprehensive strategy to cover all necessary items in the systematic review. Electronic search was conducted for the period from January 2005 until end of 2012 through PubMed. Search terms included chronic pelvic pain, women, epidemiology, prevalence, human, and female. To find and understand the changes in CPP prevalence studies after the

systematic review by Latthe et al in 2006 (18), the time range between 2005 and 2012 was chosen as a starting point, from where they ended and continuing until today. The author reviewed all related original articles fulfilling the inclusion criteria including chronic pelvic pain, women, and prevalence. All found articles were in English and available in full text. Exclusion criteria were dyspareunia, dysmenorrhea, pregnancy (and one of its related complications at least until one year after delivery), cancer and its complications, cyclic pain, dyschezia, dysuria, men, and studies and articles without the estimation of the prevalence of CPP such as reviews, discussion and comment papers, and studies about characteristics of CPP and its etiologies. Also, the article by Latthe et al (18) that was used as the basic comparative factor for writing this review was excluded.

RESULTS

There were 133 articles available by electronic searching, and reviewing their references and bibliographies led to 11 additional articles. Among them, 4 articles were duplicated. After considering their titles and abstracts, 39 articles did not meet the inclusion criteria and therefore were excluded. Studying the remaining articles' full texts revealed 58 articles about the characteristics of CPP or one of its etiologies and 26 articles (23 studies) about CPP's etiologies prevalence. There were 4 articles not available in full text, and in one study, the sample size was not mentioned. Finally, 7 articles met inclusion criteria with goal to estimate the prevalence of CPP (Fig. 1).

CPP prevalence was studied in only 7 (Table 1) of 101 articles and their estimation ranged from 5.7% in

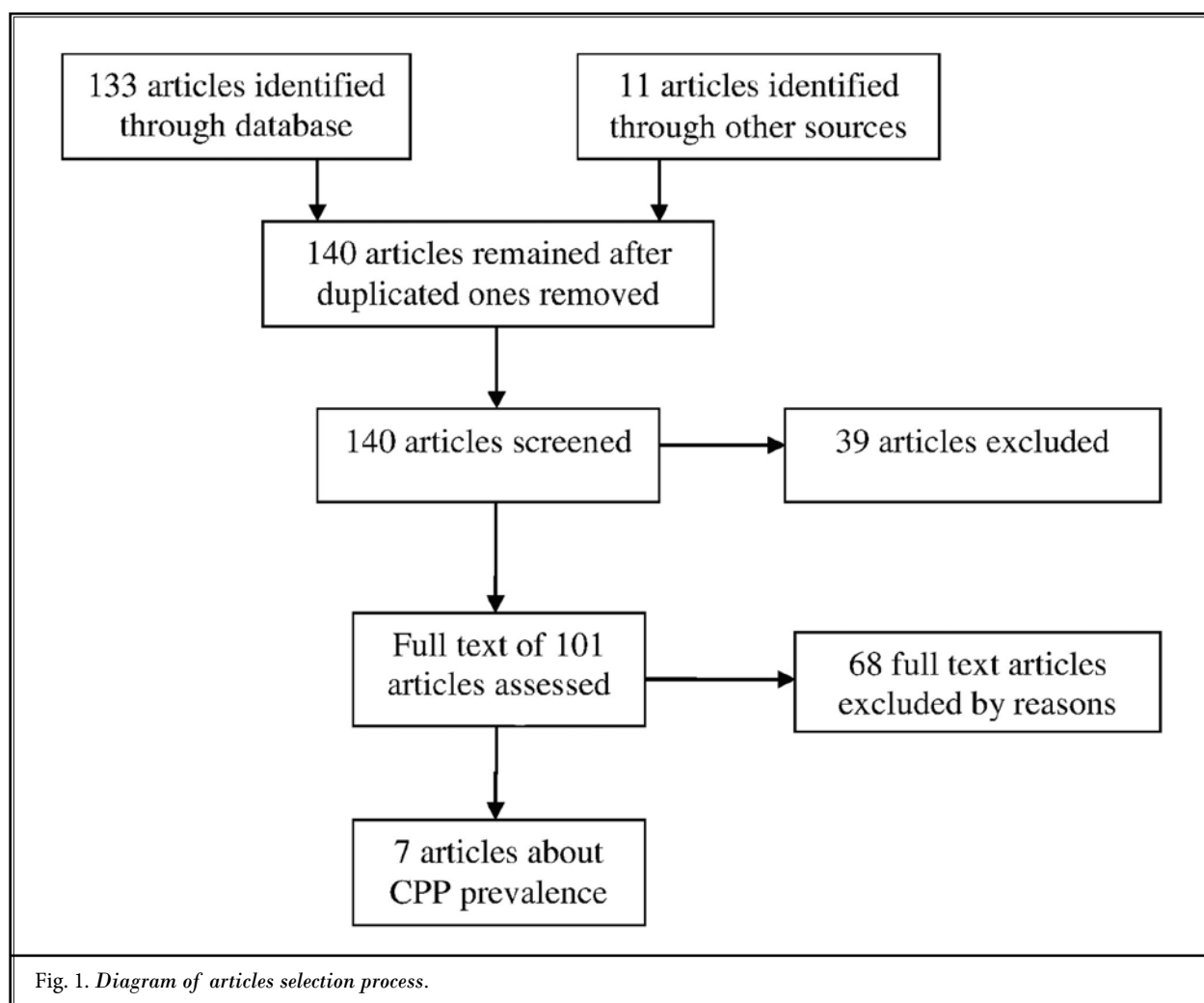


Table 1. CPP prevalence studies between 2005 and 2012.

Author/ year	Study region	Study design	Setting	Sample size = n	CPP prevalence
Marszalek et al, 2009 (20)	Austria	Data analysis by questionnaire	partakers in free of charge health examination in Vienna	981	5.7%
García-Pérez et al, 2010 (22)	Mexico	Cross-sectional	women in Hermosillo, Mexico	1,307	6%
Silva et al, 2011 (23)	Brazil	A one-year cross-sectional study/ questionnaire by interview	women who living in the Western district of Ribeirão Preto	1,278	11.5%
Hill et al, 2007 (24)	Ghana	A prospective, community-based/ health of urban Ghanaian women	women in Korle Bu Teaching Hospital	1,328	Pelvic pain frequency 17.8% and abdominal pain 17.6%
Choung et al, 2010 (25)	US	A cross-sectional/ population based mailing questionnaire	women in Olmsted County, Minnesota	1,031	20%
Pitts et al, 2008 (26)	Australia	Survey/ computer-assisted telephone interviews	part of a broader national study	1,983	21.5%
Muhammad et al, 2011 (21)	Egypt	A cross-sectional study/ questionnaire	women attending 3 family health centers	900	26.6%

Austria (20) to 26.6% in Egypt (21). Among these 7 articles, 3 were cross sectional studies (Egypt, Brazil, Mexico), one was a population based mailing questionnaire (US), one was a computer assisted telephone interview (Australia), one was data analysis by questionnaire (Austria), and one was a prospective community based article (Ghana) (Table 2).

I found 3 articles for the American continent (2 articles for North America including the US and Mexico, and one for South America including Brazil), 2 articles for Africa (Egypt and Ghana), one article for Europe (Austria), and one article for Australia.

The setting for one study was 3 health care centers (Egypt) and 6 studies had been done in one district or county (population-based).

A brief comparison of this review with the previous one is depicted in Table 2. As opposed to the Lathe et al review, 2 studies were from Africa. On the other hand, only one study was performed in Europe and no studies were from Asia.

Table 3 shows some characteristics of the included studies that can produce bias. The disadvantages of cross sectional studies should be added, such as the inappropriateness for rare conditions and lack of causal inference for observed relationship (27). Only one study fulfilled all items. None of the studies had pre-study education for their medical and health care personnel involved in the prevalence study. Sample size was more than 200 individuals in all of studies and they included almost all ages. Consistency of definition of CPP with

the one used as criteria for this review has been seen in 3 of the studies.

DISCUSSION

This systematic review of CPP prevalence studies among women shows that, in addition to the decrease in number of studies from 18 (until 2004) to 7 studies (between 2005 and 2012), few population-based studies about CPP prevalence have been done and most of them were just in one discipline or etiology and with a small sample size. We found no pattern between highest and lowest prevalence of CPP with sample size, study setting, and method of study. As we mentioned in the previous sections, CPP is a multifactorial disease but this review also shows a lack of multidisciplinary approaches. Furthermore, using small settings (such as health care unit, city hospital, or a district) can lead to a false estimation of prevalence and its psychosocioeconomic burden. Similar to the WHO review, we could not find published studies for most countries. It seems like it has not been a prioritized research area. Yet, despite all these facts, 5 out of 7 articles were from new countries including Ghana, Egypt, Austria, Australia, and Brazil that previously never had publications for CPP prevalence studies. Therefore, these 2 reviews cover all continents.

Scarcity of population-based prevalence studies around the world has remained, especially for Africa and Asia. These 2 continents have high populations and more undeveloped countries. However, they still need

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Table 2. *Regional comparison between 2 reviews for CPP prevalence studies.*

Region	Latthe et al (WHO systematic review), 2006				My review, 2005 – 2012			
	Country	# of articles on CPP Prevalence	Estimated Prevalence	Total Studies	Country	# of articles on CPP Prevalence	Estimated Prevalence	Total Studies
Africa	-	0	-	0	Egypt	1	21 – 30%	2
	-	0	-		Ghana	1	11 – 20%	
Asia	India	3	0 – 10%	5	-	0	-	0
	Pakistan	1	0 – 10%		-	0	-	
	Thailand	1	> 30.01%		-	0	-	
Europe	UK	3	20.01 – 30%	8	Austria	1	0 – 10%	1
	Norway	1	20.01 – 30%		-	0	-	
	Bosnia	1	0 – 10%		-	0	-	
	Denmark	1	20.01 – 30%		-	0	-	
	Turkey	2	20.01 – 30%		-	0	-	
North America	US	4	10.01 – 20%	5	US	1	11 – 20%	2
	Mexico	1	> 30.01%		Mexico	1	0 – 10%	
South America	-	0	-		Brazil	1	11 – 20%	
Australia	-	0	-	0	Australia	1	21 – 30%	1
Total	10			18	7			7

Table 3. *Summary of characteristics of included studies related to possible bias: based on author judgment.*

Author/ year	Sample size >200	CPP definition*	Pre study education	Response rate	Age range
Marszalek et al, 2009	+	-	NR	NR	< 80
García-Pérez et al, 2010	+	+	NR	92%	25 – 54
Silva et al, 2011	+	+	For interviewers	97.9%	> 14
Hill et al, 2007	+	-	NR	NR	> 18
Choung et al, 2010	+	-	NA (mailing questionnaire)	69%	30 – 64
Pitts et al, 2008	+	-	NR	57%	16 – 64
Muhammad et al, 2011	+	+	NR	100%	18 – 59

NR: Not Reported, NA: Not Applicable, *: using unique definition that is based on the Royal College of Obstetricians and Gynecologists and the American College of Obstetricians and Gynecologists definition for CPP.

more support by their researchers and government as well as help from other countries that have progressed in this field.

The Millennium Development Goals such as “improving maternal health,” “promoting gender equality and empowering women,” and “reducing child mortality” (28) can be good justification for taking into account all bio-psycho-socioeconomic etiologies (likes CPP) that can affect a women’s quality of life and reproductive abilities. This obligation originates from the fact that CPP is not just about pain; on the contrary, it has many psychological and socioeconomic consequences (29) such as economic hardships, difficulty in daily activities,

sleep disturbance, complications related to treatment, negative attitude and view on the medical system, decreased work productivity, repeated work leaving, altered sexual and marital status, and decreased quality of life (9). However, it seems like most of the research policies and interests in many countries have not moved significantly towards achieving these goals.

The relationship between chronic pain and non-communicable diseases and prevalence of this type of pain can be justified as a global health priority. This can help to shift policies and research from micro and medical levels towards studying sociocultural determinants of health and their connections with chronic pain (30).

Nevertheless, the quality of studies is one major factor to estimate prevalence (18).

This all happened despite the fact that the period between 2001 and 2010 was declared as the decade of pain and research in the US, and the Joint Commission on Accreditation of Healthcare Organization asked physicians to include pain as one of the vital signs beside blood pressure, pulse, respiration, and core temperature (14).

In this review, as its strength, all articles found through PubMed were in English; therefore, there were no language barriers and they were reviewed by one author thus decreasing the level of probable bias because of differing views on CPP. However, as limitations, there could be publications that are not connected to the large databases or they were at a regional level and not considered in this review, which can change the results. In addition, estimating the exact prevalence of CPP because of various types of definitions and interpretations is difficult. For instance, a number of researchers and studies considered dysmenorrhea, dyspareunia, and noncyclic pelvic pain as 3 types of CPP rather than separate problems. This has happened despite the existence of 2 definitions (mentioned previously) that made the separation between dysmenorrhea and dyspareunia with CPP. Furthermore, using the MeSH (Medical Subject Headings) database in PubMed was not helpful, since CPP was not included as

a search term. Therefore, using different key words as search terms could possibly affect results. That is why the importance of using a unique definition in studies to get comparative results needs to be emphasized.

CONCLUSION

There are a number of obstacles that hinder the estimation of CPP prevalence including lack of multidisciplinary studies, lack of statistical data and registration system, lack of using common definition and consensus about CPP, inappropriate health system performance, and lack of education and information for both patients and therapists. Therefore, to assign budgets and resources, planning health care program, evaluation of health systems, understanding disease burden, and designing other studies, appropriate and valid data and information about CPP, especially in less developed countries, is fundamental. We need both epidemiological studies to find causes and distribution and qualitative studies to assess health-related quality of life among all age groups.

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