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CONCEPT ANALYSIS

Pelvic floor health: a concept analysis

Heather Pierce, Lin Perry, Robyn Gallagher & Pauline Chiarelli

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Correspondence to H. Pierce:
e-mail: Heather.M.Pierce@student.uts.edu.au

Heather Pierce BMid (Hons) BAppSc (Phty) RM
PhD Candidate
Faculty of Health, University of Technology, Sydney, New South Wales, Australia

Lin Perry MSc PhD RN DipN
Professor of Nursing Research and Practice Development
Faculty of Health, University of Technology, Sydney, New South Wales, Australia and
Prince of Wales Hospital & Sydney, Sydney Eye Hospitals, New South Wales, Australia

Robyn Gallagher BA MN PhD RN
Professor of Nursing/Adjunct Professor
Faculty of Health, University of Technology, Sydney, New South Wales, Australia and
Charles Perkins Centre, Sydney School of Nursing, University of Sydney, New South Wales, Australia

Pauline Chiarelli PhD
Associate Professor
School of Health Sciences, University of Newcastle, Callaghan, New South Wales, Australia

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Abstract

Aim. To report an analysis of the concept 'pelvic floor health'.

Background. 'Pelvic floor health' is a term used by multiple healthcare disciplines, yet as a concept is not well defined.

Design. Rodger's evolutionary view was used to guide this analysis.

Data sources. Academic literature databases and public domain websites viewed via the Internet search engine Google.

Review methods. Literature in English, published 1946–July 2014 was reviewed. Websites were accessed in May 2014, then analysed of presentation for relevance and content until data saturation. Thematic analysis identified attributes, antecedents and consequences of the concept.

Results. Based on the defining attributes identified in the analysis, a contemporary definition is offered. 'Pelvic floor health' is the physical and functional integrity of the pelvic floor unit through the life stages of an individual (male or female), permitting an optimal quality of life through its multifunctional role, where the individual possesses or has access to knowledge, which empowers the ability to prevent or manage dysfunction.

Conclusion. This analysis provides a definition of 'pelvic floor health' that is based on a current shared meaning and distinguishes the term from medical and lay terms in a complex, multifaceted and often under-reported area of healthcare knowledge. This definition provides a basis for theory development in future research, by focusing on health rather than disorders or dysfunction. Further development of the meaning is required in an individual's social context, to ensure a contemporaneous understanding in a dynamic system of healthcare provision.

Keywords: communication, concept analysis, continence, health promotion, midwifery, multi-professional practice, nursing

Why is this research or review needed?

- The concept of pelvic floor health is a term shared by multiple disciplines yet has not previously been defined.
- Lack of pelvic floor health relates to multiple symptoms of dysfunction, which remain under-reported despite prevalence and negative lifestyle effects.
- Improved communication is required between various stakeholders in this area of knowledge.

What are the key findings?

- This article provides clarity to the concept of pelvic floor health and describes antecedents and consequences.
- This article provides a contemporary definition for pelvic floor health that is based on its use in multidisciplinary academic literature and the web-based domain.
- This article offers a definition of pelvic floor health that considers the physical, psychological and social determinants of health.

How should the findings be used to influence policy/practice/research/education?

- A clear, contemporary definition for pelvic floor health provides a basis for shared meaning to facilitate communications between healthcare discipline and community stakeholders.
- Effective communication of the concept pelvic floor health will facilitate identification and management of pelvic floor dysfunction and preventative health strategies in public health policy and the community.
- This article provides a theoretical definition for use in future research into translational strategies for interdisciplinary education and evaluation of health promotion interventions.

Introduction

Successful communication is one of the keys to effective healthcare, knowledge transfer, implementation of research knowledge and healthcare change. Use of standardized terminology and definitions and the clarification of underlying concepts are fundamental to communication of scientific research, so that topics under investigation can be clearly identified and bodies of knowledge built. 'Pelvic floor health' is a term shared between researchers, healthcare professionals and the wider public domain, yet as a concept it remains elusive in definition. This lack of a clear definition creates challenges in the exchange of ideas and information in the professional community and with consumers of health care. A recent terminology report published by the International Continence Society (ICS) and the International Urogynecological Association (IUGA) encompassed over 250 different definitions related to female pelvic floor dysfunction (Haylen *et al.* 2010), highlighting the scope and complexity of this area of knowledge. However, it is the focus on disorder and dysfunction that is particularly problematic. This is emphasized in medical definitions in academic literature (Abrams *et al.* 2002) but with research efforts increasingly focussed on health promotion and prevention a contemporary understanding of the concept 'pelvic floor health' is required. Rodger's evolutionary method of concept analysis (Rodgers 1989) is employed to determine the current meaning of 'pelvic floor health'. This analysis is offered to assist in communications between healthcare disciplines and to give an operational definition for future research.

Background

Investigation of the concept 'pelvic floor health' first requires consideration of current knowledge related to the functional anatomy of the pelvic floor as a physical entity. The pelvic floor is described as a '...compound structure that encloses the bony pelvic outlet' (Messelink *et al.* 2005, p. 375). This structure includes multiple soft tissue layers, the middle portion of which is made up predominantly of muscle tissue under neural control held in position by connective tissue (DeLancey 2005) or '...condensations of fascial and fibro muscular tissue' (Hoyte 2008, p.1). The human pelvic floor in its resting state supports the bladder and bowel and is pierced by the urethra and the anal canal. In females it also supports the uterus and is pierced by the vagina. Its physical integrity, i.e. the complete, unimpaired quality of each element of the pelvic floor, connections in its structure and to the surrounding bony pelvic ring, contributes to the achievement of optimal support and function. Dynamic support by the pelvic floor is required for successful resistance against rises in intra-abdominal pressure that occur during daily activities, thereby maintaining the position of organs and effective closure of the outlets (DeLancey *et al.* 2008). In the adult, normal pelvic floor function therefore achieves pelvic organ support and continence: successful regulation (storage and emptying) of urine and flatus or faecal matter; additionally in females it allows successful vaginal penetration e.g. during sexual intimacy and adaptation for the passage of an infant during a vaginal birth.

From an anatomical and physiological perspective, optimal functioning of the pelvic floor implies optimal health. The widely accepted definition of 'health' proposed by the World Health Organization refers to '...a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity' (World Health Organisation 1948). An understanding of 'pelvic floor health' therefore encompasses not only the anatomical and physiological integrity of the structures of the pelvic floor, but also the effect of pelvic floor function (or dysfunction) on an individual's emotional or psychological state, in a social context. Just as the overall health of an individual is subject to a variety of influences, 'pelvic floor health' will depend on a multitude of life predispositions and events. These influences include: internal factors such as genetic makeup (Altman *et al.* 2008) and the inevitable ageing process (Tinelli *et al.* 2010); external factors, such as socio-economic situation and culture (Rizk & El-Safty 2006, Walker & Gunasekera 2011), lifestyle (Dallosso *et al.* 2003, Bradley *et al.* 2005) and life events, with, for example, the most common impacting event for females being pregnancy and childbirth (DeLancey *et al.* 2008). Achievement and maintenance of optimal health through life with the prevention of disease, disorders and dysfunction is therefore complex and multifactorial.

The pelvic floor itself is a complex anatomical and physiological entity, and an intimate and private area of the human body. The hidden three-dimensional, multi-layer, multi-system nature of the pelvic floor contributes to difficulties in conceptualization. Despite these challenges, research into the understanding of pelvic floor function is in an exciting stage of development. Advances in Magnetic Resonance Imaging (MRI) and Computer Tomography (CT) scanning, and the use of clinical and diagnostic Ultrasound (US) imaging, are providing clinicians and researchers with new insights and perspectives of normal function and dysfunction (Scarpero & Dmochowski 2006, Dietz 2008, Li *et al.* 2010, Luo *et al.* 2011). These advances and recognition of the benefit of multidisciplinary management, are contributing to improved diagnosis and treatment of pelvic floor dysfunction in the discipline of medicine (Scarpero & Dmochowski 2006, Willy Davila 2009, Dietz 2012) and in other healthcare disciplines such as physiotherapy and continence nursing (Boyle *et al.* 2012, Dumoulin *et al.* 2014, Hagen *et al.* 2014). Despite these developments, healthcare services for pelvic floor dysfunction have been reported as fragmented, with poor professional integration (Davis *et al.* 2010) and translation of research evidence into wider healthcare knowledge and clinical practice remains a challenge (Abrams *et al.* 2010, Geoffrion 2010, Pentland *et al.* 2011). Recent attempts to address this problem have investigated barriers and enablers to implementation of guidelines in a multidisciplinary setting, demonstrating the value of collaboration with key disciplinary stakeholders (Frawley *et al.* 2014).

Recognition of the importance of a collaborative approach is demonstrated through international interdisciplinary partnerships and working groups that have been formed to develop guidelines for standardized terminology, diagnoses of disorders and recommendations for optimal management of symptoms of pelvic floor dysfunction (Abrams *et al.* 2002, 2010, Messelink *et al.* 2005, Haylen *et al.* 2010). The 5th Consultation on Incontinence held in Paris in February 2012 involved the work of 23 committees including almost 200 experts and the reports of various committees assist researchers and clinicians navigate this extensive and growing body of knowledge (Abrams *et al.* 2013). This collective effort facilitates communications between professional groups, guiding the direction of future research efforts through evaluation, consultation, collation and review of a growing evidence base; however, to date this has not produced a consensus statement on the concept of 'pelvic floor health'. Lukacz *et al.* (2011) have provided a consensus statement on the related concept of a 'healthy bladder', determined by a panel of experts from urology, urogynaecology, nursing and behavioural therapy disciplines. The purpose of the statement was to raise awareness of bladder health among the general public, healthcare providers and policy makers, thereby minimizing the impact of poor bladder health for affected people and stimulating primary prevention of bladder conditions. In this statement, healthy pelvic floor function was viewed as an important influence on overall bladder health (Lukacz *et al.* 2011) but while the role of education in health promotion was discussed, the use of clearly defined terms or shared concepts in knowledge transfer were not.

Definitions detailed in published reports related to the pelvic floor are primarily focussed on dysfunction. In particular, alterations in female pelvic floor function have comprised a major component of the academic literature; described as an abstract concept, several different meanings have been ascribed, depending on the disorder under consideration (DeLancey 2005). According to a recent terminology report, female pelvic floor dysfunction includes: urinary incontinence symptoms; bladder storage symptoms; sensory, voiding and postmicturition symptoms; pelvic organ prolapse symptoms; symptoms of sexual and anorectal dysfunction and lower urinary tract pain/infection or pelvic pain (Haylen *et al.* 2010). This is clearly a problematic aspect of this topic: 8·2% (348 million) of the world's population (Irwin *et al.* 2011) are estimated to suffer uri-

nary incontinence, with one large Australian epidemiological survey reporting the prevalence of women leaking urine as 12·8%, 36·1% and 35% across age cohorts of 18–23, 45–50 and 70–75 years (Chiarelli *et al.* 1999). A systematic review of prevalence studies concluded that faecal incontinence is present in 11–15% of community dwelling adults (Macmillan *et al.* 2004), possibly affecting as many as one in five women (Botlero *et al.* 2011). In addition, a recent review of Australian age specific hospital data calculated a 19% chance of a woman having surgery for pelvic organ prolapse in her lifetime (Smith *et al.* 2010). These prevalence figures, together with evidence of the negative impact of these conditions on quality of life (Saadoun *et al.* 2006, Coyne *et al.* 2012, Avery *et al.* 2013) support pelvic floor dysfunction as both a personal and public health concern; however, the very nature of the location and function of the pelvic floor can be a barrier to open and effective communication. These disorders remain under-reported, most likely due to the shame or stigma associated with disclosure of signs and symptoms of dysfunction (Garcia *et al.* 2005, Marecki & Seo 2010). This further highlights the potential burden and morbidity of pelvic floor dysfunction and the urgent need for research into improved forms of communication.

Successful communication relies on shared meanings. Both research and clinical practice require agreed and specific definitions, the use of which should be regularly re-evaluated (Sand & Corcos 2010); the absence of such 'unifying definitions' and lack of uptake of recommended terms in the field of knowledge related to pelvic floor dysfunction continues to be a challenge (Dannaway *et al.* 2013, Milsom *et al.* 2013). One proposed reason for this is that each discipline in the field has differing underlying assumptions regarding the use of terms and concepts. Each individual learns and assimilates into the particular culture (becomes 'encultured') in their discipline and consequently is able to share knowledge in the domain through linguistic expression (Rodgers & Knafl 2002). Beyond the bounds of the discipline, however, the same or alternate terms may be used to describe similar or related phenomena. This carries the potential for misunderstanding and therefore barriers to communication. In an ever-expanding world of multidisciplinary research, knowledge and debate, a dynamic process is required for consensus of definition of terms and underlying concepts.

The review

Concept analysis is a method of research employed to clarify definitions of topics of interest and is therefore highly applicable to 'pelvic floor health' conceptualization (Rodgers 1989). According to Walker and Avant (2011), concept analysis is a formal linguistic exercise that enables determination of defining elements or 'attributes' of a concept or idea to facilitate communication. The process is of particular assistance in the clarification of vague or poorly understood concepts, so that more precise operational definitions can be developed. This allows researchers to construct hypotheses that more accurately reflect relationships in the areas studied (Walker & Avant 2011).

In this review Rodger's evolutionary view of concept analysis (Rodgers & Knafl 2002) is used to investigate the concept of 'pelvic floor health' (Box 1). This model was selected because it views concepts as continually subject to change thereby addressing '... contemporary concerns valuing dynamism and interrelationships in reality' (Rodgers 1989, p. 332). In this approach, the definition and attributes of the concept are identified through attention to common use. Concepts are '... considered to be an abstraction that is expressed in some form...' and become associated with a particular set of attributes through socialization and repeated public interaction (Rodgers 1989, p. 332). This review therefore seeks to clarify the common uses of the term 'pelvic floor health' in different realms and thereby propose a definition for use in research so that communica-

Box 1

Rodger's steps in concept analysis

1. Identify and name the concept of interest and associated expressions/terminology
2. Identify and select an appropriate realm (setting and sample) and period of time for data collection
3. Collect data regarding the attributes of the concept, including surrogate (alternate) terms, antecedents, consequences and references
4. Identify related terms/concepts
5. Analyse data regarding the above characteristics, with identification of major themes
6. Conduct interdisciplinary comparisons – in this instance between medicine, allied health, nursing and midwifery
7. Identify a model case of the concept
8. Identify hypotheses and implications for further development (Rodgers & Knafl 2002).

tion can be optimized between healthcare disciplines and with consumers of health care.

Purpose of the analysis

The purpose of this review is to clarify the concept of 'pelvic floor health' by analysis of the contextual attributes of the concept and synonym 'pelvic floor well-being' in medical, allied health and nursing/midwifery literature and the public domain. The term 'pelvic floor health' was chosen for analysis, as it's possible meaning was considered to encompass optimal pelvic floor function in a physical, psychological and social context. Terminologies for pelvic floor disorders and dysfunction have already been reported elsewhere (Weber *et al.* 2001, Abrams *et al.* 2002, Messelink *et al.* 2005, Haylen *et al.* 2010). This analysis will assist in setting a boundary between health and disorders and provide a platform for future research by establishing a clear, contemporary, operational definition for use in multidisciplinary contexts and with healthcare consumers.

Data sources

Professional health literature

A comprehensive literature search of the concept 'pelvic floor health' was conducted between May–July 2014, in Academic Search (EBSCO), Ovid (Medline and Embase), ProQuest Central, SCOPUS, CINAHL and PubMed which included all literature published from 1946 to present. The search range reflected the scope of the largest database Medline. The search terms used were 'pelvic floor health' and 'pelvic floor well-being' as they are related antonyms to the commonly used medical term 'pelvic floor disorder' (http://www.merriam-webster.com/thesaurus/health). Inclusion criteria incorporated publication in peer-reviewed journals, English language and human-related content (both male and female), sought amongst the title, abstract and keywords of indexed publications. Due to the small number of original articles retrieved, the search was expanded to include editorial comments, letters and conference publications in peer-reviewed journals. Following elimination of duplicates 40 articles were retained. Abstracts were read and reviewed for relevant content and a further 27 articles excluded, leaving 13 articles for analysis (Figure 1). As this search method had discovered a relatively low number of articles, the search was repeated using the Internet search engine Google Scholar. This method additionally scans for the terms in the body of the text, resulting in a further 169 articles. Removal of duplicates and review of relevant content provided a further 27 articles. However, review of the contextual attributes of the term in these texts disclosed no new attributes of the term and it was therefore determined that saturation had been reached. Authorship discipline was determined by identification of professional affiliation of the lead author.

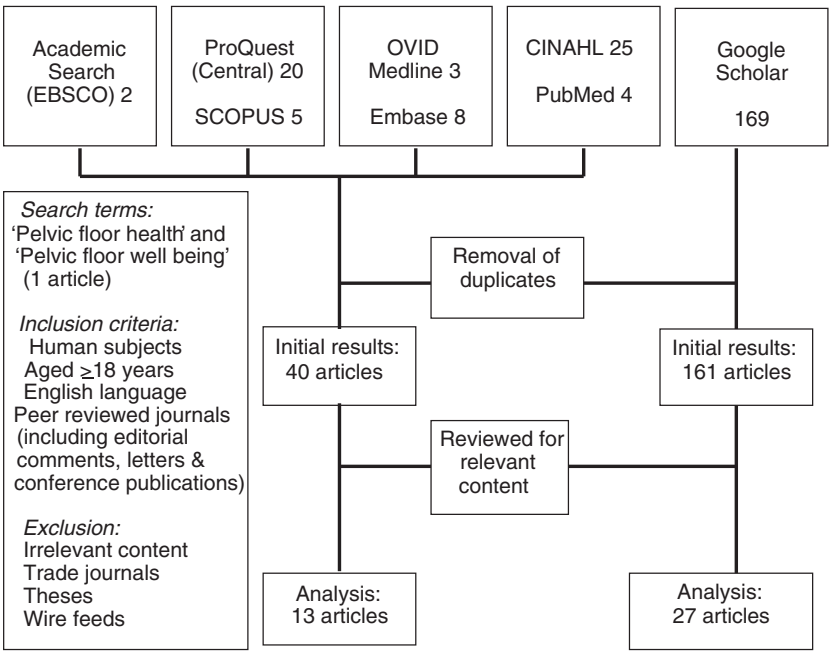

Figure 1 Search strategy for 'pelvic floor health' in the academic literature.

Websites

A search was also undertaken in May 2014 using the Internet search engine Google with the terms 'pelvic floor health' (218,000 hits) and 'pelvic floor well-being' (3,770 hits). It was decided that further examination of the use of these terms in web-based sources would help clarify a contemporary common meaning, as it was evident that the terms were in popular use in the public domain. For each term, in order of presentation, sites were reviewed for content and relevance, with elimination of duplicate or cross-referenced sites, until no further attributes of the concept were identified. Thirty websites were included in this review.

Data extraction

Data regarding the attributes of the concept, including surrogate (alternate) terms, antecedents, consequences and references were extracted by examination of the contextual use of the terms. Words with shared meanings were placed in subgroups, classified according to common themes that became evident throughout the analysis.

Results

Based on this review, 'pelvic floor health' is a term with limited use in the academic literature by healthcare disciplines but is in common use in the web-based public domain. Limited academic use was evident in the small number of relevant articles retrieved (13) using the term either as a key word or in the abstract. When the search was widened to Google Scholar, seeking the term in the body of the text, a broader academic use was evident but without identifying further attributes of the concept. The articles reviewed were authored by medical, nursing, midwifery and physiotherapy disciplines. Tables 1a–c summarize the articles and contextual attributes of the analysed text and identify emergent themes.

Defining attributes

In the academic literature the term 'pelvic floor health' was most commonly used in relation to women's health through the life stages of pregnancy and birth. These life stages were identified as critical periods for the prevention of pelvic floor dysfunction, in particular incontinence (Brubaker 2002, Lavy *et al.* 2012, Bray *et al.* 2013, Hussain & Kearney 2013) with one article highlighting the increased prevalence of pelvic organ prolapse in parous women (Luft 2006). Literature of medical origin predominantly referred to evaluation of pelvic floor dysfunction (Altomare & Rockwood 2014) and interventions (Brubaker 2002, Bray *et al.* 2013, Hussain & Kearney 2013), whereas that derived from nursing and midwifery authors was primarily concerned with women's experiences and knowledge of pelvic floor dysfunction, referring to education and empowerment (Smith 2004, Carls 2007, Herron-Marx *et al.* 2007,

Table 1a Contextual attributes of 'pelvic floor health' and healthcare discipline author(s) in the academic literature.

Author	Discipline	Contextual attributes
Altomare and Rockwood (2014)	Medical (Colorectal)	Patients, symptoms, disease, measure, quality of life
Bray *et al.* (2013)	Medical (Obstetric)	Childbirth, pregnancy, critical period, prevention, incontinence, intervention, women's health
Brubaker (2002)	Medical (Obstetric)	Women, vaginal delivery, postnatal, incontinence, prevention with surgery
Carls (2007)	Nursing	Female athletes, incontinence, lack of knowledge and disclosure, education, quality of life
Ghoniem *et al.* (2008)	Medical (Urogynaecology)	Value, incontinence, economic measures, financial burden
Herron-Marx *et al.* (2007)	Midwifery	Women's experiences, postnatal, perineal and pelvic floor morbidity
Geoffrion *et al.* (2009)	Medical (Obstetric/ Urogynaecology)	Women, knowledge, symptoms, quality of life, workshop
Howard-Thornton *et al.* (2011)	Nursing/Physiotherapy	Women, learn, look after, muscles, empower, younger generation, aware, educational
Hussain and Kearney (2013)	Medical (Urogynaecology)	Women, incontinence, treatment, awareness, solutions, expectations
Lavy *et al.* (2012)	Medical (Obstetric/ Urogynaecology)	Vaginal delivery, pregnancy, pelvic floor integrity
Luft (2006)	Nursing	Pelvic organ prolapse, women, pelvic floor support, pregnancy, method of delivery, risk
Minaglia *et al.* (2012)	Nursing	Knowledge, education, internet, information, patients

Table 1b Themes related to 'Pelvic floor health' and healthcare discipline author(s) in the academic literature.

Author	Discipline	Women	Function/dysfunction	Quality of Life	Life Stages	Knowledge	Disclosure	Prevention/management
Altomare and Rockwood (2014)	Medical (Colorectal)	Patients	*	*				*
Bray *et al.* (2013)	Medical (Obstetric)	*	*		*			*
(Brubaker (2002))	Medical (Obstetric)	*	*		*			*
Carls (2007)	Nursing	*	*	*	*	*	*	
Ghoniem *et al.* (2008)	Medical (Urogynaecology)			Economic burden				
Herron-Marx *et al.* (2007)	Midwifery	*	*	*	*			
Geoffrion *et al.* (2009)	Medical (Obstetric/Urogynaecology)	*	*	*		*		
Howard-Thornton *et al.* (2011)	Nursing/physiotherapy	*			*	*		*
Hussain and Kearney (2013)	Medical (Urogynaecology)	*	*			*		*
Lavy *et al.* (2012)	Medical Obstetric/(Urogynaecology)	*	*		*			
Luft (2006)	Nursing	*	*		*			*
Minaglia *et al.* (2012)	Nursing	Patients	*			*		
Smith (2004)	Nursing	*	*	*	*	*	*	*

Table 1c Themes and key words for 'pelvic floor health' in the academic literature.

Themes	Key words
Women	Female, patients
Function or dysfunction	Symptoms, disease, incontinence, pelvic organ prolapse, morbidity
Quality of life	Quality of life, value, burden, experiences, optimal, well being
Life stages	Childbirth, pregnancy, vaginal delivery, postnatal, athletes, younger generation, phases of a woman's life, woman ages
Knowledge	Knowledge, lack of knowledge, education, workshop, learn, empower, aware, educational, awareness, expectations, internet, information
Disclosure	Disclosure, neglected, not readily discussed, overlooked, important
Prevention or management	Measures, prevention, intervention, surgery, look after, treatment, method of delivery, enhance, health practices

Howard-Thornton *et al.* 2011, Minaglia *et al.* 2012). An exception to this trend was the medically authored article by Geoffrion *et al.* (2009), which provided an evaluation of women's knowledge of pelvic floor disorders, following a 'nurse-run' educational programme. It is probable that some of the reviewed articles were authored with input from different disciplines, but where an author had no disciplinary professional affiliation identified, none was assumed. Several articles referred to the negative experience of pelvic floor dysfunction affecting quality of life (Tables 1b and 1c), with Ghoniem *et al.* (2008) investigating the economic burden. Literature accessed through Google Scholar used 'pelvic floor health' in the context of physiotherapy assessment of pelvic floor dysfunction (Reissing *et al.* 2005). This use was similar to that in the medical literature and therefore provided no additional perspectives. Most of the articles were concerned with the identification, evaluation, prevention or management of dysfunction (Table 1b).

In the Google web-based search the majority of hits fell into two main categories: non-profit professional and consumer support groups or websites providing consumer information with advertising of services (Table 2). Advertising websites consisted of: private healthcare professionals

Table 2 Themes and key words in Google search 'Pelvic Floor Health'.

Themes	Key words
Stakeholders	Women, female, men, public, consumers, health professionals, women's health physiotherapists, fitness professionals, collaborative team: urologist, gynaecologist, colorectal surgeon, Yoga, Pilates, fitness trainer, osteopath, chiropractor, acupuncturist, midwives, doulas
Function or dysfunction	Fitness, problems, signs and symptoms, disorders, dysfunction, continence, sexual function
Quality of life	Holistic, hope, confidence, well being, lifestyle, habits, working postures, benefits, improving lives
Life stages	Pregnancy, childbirth, postnatal, menopause, life stages, aging population
Knowledge	Education, information, 'get to know', 'what to do', empower, discovery talk, myths, classes, online videos, questions, demystify
Disclosure	Unrecognised, embarrassing, shame
Prevention or management	Protect, help, safe, exercise, care, physical activity, program, proactive, fitness, physical strength, training, technology, personalised treatment, dietary change, medicine, non invasive, advanced procedures, workshop, preventative health
Pelvic floor	Hammock, function, dysfunction, supportive sling, anatomy, complex, multilayered

Table 3 Google search of 'Pelvic Floor Health': first 30 relevant websites with country of origin and order of presentation (hit number).

Website type	No. of sites	Organisations' title (Country*, hit number)
Consumer and/or professional support Non-for-profit	6	Continence Foundation of Australia (1) Women's Health Inc. (Aus., 2) Physical Activity Australia (13) Hope heals: Association for Pelvic Organ Support (USA, 17) Childbirth Connection (USA, 27) Gynaecological Awareness Information Network (USA, 26)
Private Physiotherapy	10	Australia: †7 hits (5, 6, 10, 12, 14, 21, 29); USA: 2 hits (22, 23); Germany: 1 hit (26)
Private Hospital or Medical centre/ clinic	4	Goulbourn Valley Health (Aus., 4); John Hopkins Medicine (USA, 7); St Elizabeth's Medical Centre: Centre for Continence and Pelvic Floor Health (USA, 18); University of Pennsylvania (USA, 30)
Private fitness industry	6	Mishfit (Aus., 3); The Pregnancy Centre (Aus., 14); Discreetly Fit (Aus., 16); Yoga teacher (USA, 20); Centre for Women's Fitness (Dance, Pilates) (USA, 22); MotionArts (Aus., 28)
Private complementary medicine	1	Body of Life Health Centre (Aus., 11)
Professional Association	2	Australian Physiotherapy Association (8); Australian Fitness network (9)
Private Midwife	1	Pregnancy, Birth and Beyond (Aus., 16)
Private product support	1	WIN Health Ltd (Scotland UK, 19)

*Country identified where not in title; Aus. = Australia, USA = Unites States of America, UK = United Kingdom.
†Names of private practices/business not detailed.

including physiotherapists and a private midwife; multi-discipline specialty clinics or hospitals with relevant medical and allied health sub-specialties such as urogynaecology, urology and colorectal surgeons and physiotherapy; a complementary practitioner business with osteopath, chiropractor and acupuncturist; fitness industry practitioners such as personal trainers, exercise therapists, instructors for Pilates, Yoga and the Alexander technique. Lack of representation of the nursing profession in the analysed websites reflects the role of nurses who are less likely to work autonomously in private industry and to advertise their services. Nursing input was evident, however, as educational contributions in non-profit organisations. A majority of the services reviewed were Australian based (19 sites); other nations represented included ten USA-based sites, one from the UK and one from another European country (Table 3). This finding most likely reflects the search engine location and use of English language.

Analysis of the web sites revealed similar contextual attributes to the review of academic literature but with a broader focus: reference was made to men as well as women; women's health through life stages included not

only pregnancy, birth and postnatal periods but also menopause and ageing. 'Pelvic floor health' was also viewed as an unrecognized and embarrassing topic. The provision of education to the public domain was a common focus through the use of professionally authored articles detailing pelvic floor anatomy, function and dysfunction, the importance of seeking help, discussion of lifestyle factors influencing 'pelvic floor health', including the value of 'safe' exercise and ways to prevent dysfunction and restore function. Of note was a lack of consumer representation in these data, such as online discussion fora. It was evident from the web-based search that those with a stake in this area of health care include consumers and a variety of different professional health care providers (beyond medicine, nursing and midwifery), practitioners and trainers (Table 3). The major themes identified in this analysis were: gender (women/men); pelvic floor function/dysfunction; quality of life; life stages; knowledge; symptom disclosure and prevention or management of dysfunction (Tables 1b, 1c and 2).

Definition

According to this analysis, a proposed contemporaneous definition of the concept of 'pelvic floor health' is as follows:

'Pelvic floor health' refers to the physical and functional integrity of the pelvic floor unit through the life stages of an individual (male or female), permitting optimal quality of life through its multifunctional role and where the individual possesses or has access to knowledge, which empowers the ability to prevent or manage dysfunction.

Antecedents, consequences and references

Antecedents are processes that are required to be in place before the concept; in other words, that are necessary for the concept to come into existence. The physical or 'biological' antecedents for pelvic floor health are normal anatomy, structural integrity and normal function (physiology) of the pelvic floor tissues and pelvic organs. According to a conceptual framework published by the World Health Organization (Solar & Irwin 2010), the biological state should be placed in the social determinants of health, including socioeconomic and political context, socioeconomic position (class, gender or race) and the material circumstances of an individual's living and working conditions, including food availability (i.e. good nutrition, adequate hydration) and psychosocial influences. Antecedents would therefore incorporate optimal social determinants and material living conditions.

Consequences follow the occurrence of the concept (Rodgers 1989). The consequences of 'pelvic floor health' would be a disease-free state, which confers continence, pelvic organ support and sexual health, meeting the daily demands of activities in an individual's psychological, cultural and societal context over a lifetime, without the burden of cost, stigma or shame. References clarify the range of events, situations or phenomena which demonstrate the occurrence of the concept (Rodgers 1989, Walker & Avant 2011). In this instance, 'pelvic floor health' is evidenced by the absence of signs and symptoms of dysfunction.

Model case

Pam is a 65-year-old woman, who lives in a large, rural community, with access to clean water, sanitation, plentiful food and medical support services. She is well educated and has led an active life, including gaining professional qualifications and paid employment. She lives in a supportive social environment, has a stable relationship with her partner and has given birth to two children vaginally, who are now aged in their 40′s. Pam has maintained pelvic floor integrity throughout her lifetime and experiences normal pelvic floor function, i.e. continence, pelvic organ support and sexual health. She is aware of and implements lifestyle choices and management strategies that optimize her 'pelvic floor health' as she ages.

Related concepts and alternate terms

An analysis of the concept of 'pelvic floor health' requires separation of the definition as distinct from related concepts and alternate terms. As attributes of 'pelvic floor health' were identified, it was evident that a multitude of terms related to the 'pelvic floor' itself were in common use. It was also apparent that the focus of the academic literature was on disorders and dysfunction. Terms used to describe various related pelvic floor disorders included: urinary incontinence; faecal/anal incontinence; pelvic organ prolapse; dyspareunia and lower urinary tract disorders/symptoms. Related concepts in common use in both academic literature and the web-based domain included pelvic floor or muscle: function; integrity; exercise; relaxation; training; fitness; strength; dysfunction; insufficiency; weakness; and hypertonicity (See Supporting Information Table S1).

Discussion

This analysis provides a contemporary definition of the concept of 'pelvic floor health' which has not been formerly

clarified in the academic literature. The concepts of 'continence' and 'incontinence' have been previously investigated using Walker and Avant's method (Walker & Avant 2011, Dombrowsky & Gray 2012); however, while informative of the historical origins and development of the concepts to present day attributes, the proposed definitions have limited application in wider interdisciplinary healthcare knowledge. Maintenance of continence, i.e. voluntary control over bladder or bowel storage and elimination, is one of several functions of the pelvic floor. In addition to this, pelvic floor disorders often co-exist (Lawrence *et al.* 2008). Development of a definition in the present analysis assists in explaining the various roles of the concept across medical and non-medical disciplines, specialties and sub-specialties involved in the maintenance of pelvic floor health and management of these disorders.

'Pelvic floor health' is a term currently used by multiple healthcare disciplines. Limited use of the term in the academic literature most likely reflects the focus of research efforts towards identification and management of disorders and dysfunction. In contrast, a focus on 'pelvic floor health' promotion, professional and consumer education and the advertorial use of the term on the web highlights a trend to facilitate symptom disclosure and 'help seeking' behaviours in this type of medium. Working groups and expert opinions have highlighted the need for research into continence awareness, promotion and advocacy for both primary prevention and education of professional groups (Abrams *et al.* 2010, Lukacz *et al.* 2011, Buckley *et al.* 2013). Use of the term with a focus on health rather than disorder or dysfunction, may provide the key to improving communication. Recommendations also include the need to generate a multidisciplinary approach in investigations through collaboration of '…biological, physical and mathematical sciences' (Abrams *et al.* 2010). This view can be extended not only to include a range of different medical sub-specialities but also to engage the expertise of disciplines such as nursing, midwifery, allied health and complementary medicine. This analysis demonstrates the wide range of healthcare discipline stakeholders with special interest in this area of knowledge.

Clarification of this concept can assist in guiding future research through a united focus on health rather than disorders or dysfunction. Rizk and El-Safty (2006) put forward a definition of 'pelvic floor health' in women that not only includes urinary and faecal control, integrity of pelvic organ support and sexual health, but also considers the woman's culture when promoting a safe and less traumatic labour and birth. However, while emphasizing the importance of the cultural aspects of this concept, their definition remains focused on a medical model of dysfunction and managing risk. In this analysis, identification of the critical attributes of the concept lies in a health model and provides a new basis for theory development. It is suggested that the definition may resolve potential misunderstandings between professional disciplines and fields of knowledge and may facilitate communication with consumers of healthcare.

This review also highlights gaps in knowledge for further research and exploration. It is apparent that the primary focus of 'pelvic floor health' is on women, with minimal mention of men: none of the reviewed papers referred to male 'pelvic floor health' and only two private physiotherapy websites mentioned male healthcare services. This occurrence is related to the 'risks' of childbirth trauma to female pelvic floor function, in particular the first birth (Bray *et al.* 2013); there is subsequently a growing evidence base on the prevention and management of pelvic floor dysfunction in this area. There is also a growing body of discussion on the importance of preventative measures, through the provision of health education and lifestyle advice to other 'at risk' groups such female athletes (Carls 2007) and teenagers (Howard-Thornton *et al.* 2011). Assessment and management of male pelvic floor dysfunction is also an emerging area of research (Dorey 2005, Hunter *et al.* 2007, Nahon *et al.* 2011). While it is acknowledged that females are inherently more 'at risk' of pelvic floor dysfunction, the use of the term in relation to male 'pelvic floor health' issues deserves further exploration.

Also apparent in this review is the lack of 'consumer' voice in the analysis of the concept. Perhaps this is not surprising considering the intimate and embarrassing nature of pelvic floor dysfunction and reports that few people disclose or seek help for their problems (Garcia *et al.* 2005). On further exploration of the reviewed web sites, question and answer forums can be found in consumer support and advocacy online groups, such as the Continence Foundation of Australia (CFA: http://www.continence.org.au/forum/) and Women's Health Queensland Wide Inc. (http://www.womentowomen.com/). These non-profit organisations advertise confidential support such as phone advisory services or email based question and answer forums, staffed by multidisciplinary healthcare professionals. The accuracy of information provided on websites has been a topic of review, with a trend towards higher relevance and accuracy among government, university or 'society sponsored' sites (Minaglia *et al.* 2012). It is evident these organisations seek to de-stigmatise pelvic floor disorders and promote consumer awareness but lack of consumer input is further evidence of the challenges of symptom disclosure, social stigma, isolation and barriers to help seeking. Lack of data in the literature and web-based search related to anorectal dysfunction and

pelvic pain further reflects the 'taboo' topic and lack of attention given to these disorders and challenges of symptom identification and disclosure. It should also be noted that individuals at the extremes of age, or with poor socio-economic status, cultural barriers and low education are not likely to be represented in this type of analysis nor be reached with this type of educational medium (Geoffrion 2010).

Limitations

The main limitation of this concept analysis was the constraint of data search to the English language, with majority of web-based sites sourced from Australia. This therefore restricts generalization of the meaning of 'pelvic floor health' in an international context. A web-based analysis provides a limited source of information, restricting the scope of the data representation to those with Internet access. A definition of the concept 'pelvic floor health' that encompasses political, cultural, psychological and social determinants should canvas data from multiple sources. It is likely those who live in the social structures of developing countries would have limited or no access to the Internet and therefore web-based information and related health educational opportunities.

Conclusion

This analysis has provided a definition of the concept 'pelvic floor health'. The definition is a contemporary reflection of its use in academic literature and web-based sites of non-profit support groups, professional associations and various private business healthcare providers such as medicine, nursing, midwifery, allied health, exercise industry professionals and complementary medicine practitioners. An operational definition of 'pelvic floor health' provides a basis for shared meaning of the concept to facilitate communications between healthcare discipline stakeholders. Effective communication in the multidisciplinary team is an important part not only of effective management of pelvic floor dysfunction and support of interdisciplinary education but also, in the policy arena, for the promotion of preventative strategies for optimal health. A focus on health rather than disorders and dysfunction may facilitate preventative health strategies in the community.

Further development of the meaning is required to ensure a contemporaneous understanding in a dynamic system of healthcare provision of professional and lay use of the term at both local and international levels. It is hypothesized that the definition will assist in future research supporting the translation of evidence through evaluation of educational needs and primary health promotion strategies for 'pelvic floor health', thereby maintaining or improving an individual's quality of life through optimizing physical and psychological well-being in their society or culture.

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Conflict of interest

No conflict of interest was declared by the authors in relation to the study itself. Note that Lin Perry is a *JAN* editor but, in line with usual practice, this paper was subjected to double blind peer review and was edited by another editor.

Author contributions

All authors have agreed on the final version and meet at least one of the following criteria [recommended by the ICMJE (http://www.icmje.org/ethical_1author.html)]:

- substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data;
- drafting the article or revising it critically for important intellectual content.

Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's web-site.

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