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Menopausal Transition: A Concept Analysis

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Abstract

Aim: To perform concept analysis in order to understand menopausal transition.
Background: The global demographic is shifting towards older population. With this changing demographic profile, geriatric providers will be faced with increasing number of women seeking help for symptoms associated with chronic conditions and issues that originated in midlife, called menopausal transition stage. Midlife for women encompasses approximately the ages of 40-65, which is called the menopausal transition stage.
Method: Walker and Avant's eight steps to concept analysis.
Results: Defining attributes identified are a period of change in a woman's normal reproductive continuum, approaching reproductive senescence, and a rising FSH level.
Discussion: Gaining an understanding of menopausal transition gives us insight on the attributes of the concept. This provides an armamentarium needed for health care providers to monitor women in transition for some of the potential consequences and to promote preventative strategies. Since the majority of the nursing healthcare workforce worldwide are women, understanding the concept may also enhance their own transition.
Conclusion: An aging population triggers the need to understand concepts that are likely to surface, and one of these concepts is menopause. The concept of menopausal transition has relevance to every woman worldwide. As the number of older women grows, there will be a need for healthcare providers or health professionals to explain this period of life transition to women and their families.

Keywords: Concept analysis; Menopausal transition

Introduction

The global population of older adults is projected to reach 2.1 billion by 2050 [1]. It is estimated that by 2050 older people will account for 35% of Europe's population, 28% of North America, 24% Asia, 25% Latin America and the Caribbean, and 9% in Africa [1]. The United States (U.S.) is having similar trend in its demographic profile of older people [2]. Increased life expectancy and reduced fertility are the two identified drivers for this population trend [1]. While the number of Americans aged 45-64 is growing, data has shown that older women are expected to outnumber older men, 28.3 million to 22.6 million respectively [2].

With the aging demographics, geriatric providers worldwide will be faced with increasing number of women seeking help for symptoms associated with chronic conditions and issues that originated in midlife. Midlife for women encompasses approximately the ages of 40-65, which is called the menopausal transition stage. Menopausal transition is an important milestone for many women, as this represents a harbinger for their health status. It is the period when physiologic changes occurs as women approach reproductive senescence [3]. Interest in the topic of menopausal transition expands interdisciplinary audience from researchers, scholars, practitioner, health care professionals, and students from across disciplines, such public health, women's studies, health education, social work, sociology, anthropology, psychology, business and history. While most women will experience menopausal transition during their lifetime, very little is known about this concept. Therefore, the purpose of our paper is to explore the concept of menopausal transition using Walker and Avant's [4] approach.

Method

Walker and Avant [4] described concept analysis as an approach to further understand the meaning of a term that requires clarification. The eight-step approach used for this concept analysis includes 1) selecting a concept; 2) determining the aims of analysis; 3) identifying uses of the concept; 4) identifying the defining attributes; 5) developing a model case scenario; 6) discovering any additional case scenarios; 7) identifying antecedents and consequences; and 8) defining empirical referents [4]**.** Electronic databases searched included Cumulative Index to Nursing and Allied Health Literature (CINAHL) PubMED, and PsycINFO using keywords menopausal transition, menopause AND transition, perimenopause, climacteric, and premenopausal.

Results

Definitions of the Concepts

The word transition originated from mid-15th C Latin transitionem, meaning going across or over [5]. Merriam Webster Dictionary [6] defines transition as a passage, movement or evolution from one stage, state or condition to another. The word menopause was first coined by a French physician in 1821 but the term was not used in medicine until the 19th C [7]. The term came from Greek meno, which means month, and pause meaning to stop [8]. Menopause is defined as a permanent cessation of a woman's menstrual period, which can occur naturally or induced [9]. Menopausal transition a defined as the progressive endocrinologic continuum, in which women of reproductive age go through regular, cyclic, and predictable menses, which are part of ovulatory cycle, to final menstrual period associated with ovarian senescence [10].

Related Concepts

Related concepts to menopausal transition include perimenopause, climacteric, and pre-menopause. (Table 1) presents the definition of these related concepts based on the World Health Organization and the International Menopause Society.

Related Concept	Definition
Perimenopause	Period immediately before the menopause when the endocrinologic, biologic, and clinical features of approaching menopause commence, and the first year after menopause
Climacteric	Phase incorporating the perimenopause by extending for a longer variable period before and after the perimenopause.
Premenopause	Refers to the whole of the reproductive period before the menopause. It encompasses the time from the first menstrual cycle until FMP (final menstrual period).
Menopausal transition	Reserved for that period before the FMP when variability in the menstrual cycle is usually increased. This period usually takes about four years.

Source: Sherman, S. (2005). Defining the menopausal transition. *The American Journal of Medicine, 118*(12), pp. 4S-5S (https://doi.org/10.1016/j.amjmed.2005.11.002).

Table 1: Related Concepts and Definitions. Source.

Uses of Concept

Reproductive Aging

Because chronological age is not a good indicator of reproductive aging, a classification system was developed. This classification of stages and nomenclature for reproductive aging was developed at the Stages of Reproductive Aging Workshop (STRAW) [3]. A woman's adult life is classified into three phases-reproductive years, menopausal transition, and post-menopause. These three phases are further divided into seven stages with the Final Menstrual Period (FMP) being the anchor. Reproductive years begin with menarche, or the first menstrual period, until subtle changes in menstrual flow or length are noted, whereas post-menopause begins from the time of the FMP. Menopausal transition, on the other hand, begins when the menstrual cycle starts to become variable until the FMP is noted, and it has two stages-early and late. The early menopausal transition stage occurs when there is a persistent ≥ 7 days difference in the length of consecutive cycles, whereas late stage is described as when the interval of amenorrhea is ≥ 60 days (late menopausal transition stage) [3]. Several environmental, genetic, and behavioral factors could affect reproductive aging, including smoking, diet, exercise, body mass index, mood, climate, culture, and medications such as chemotherapy. The average age for menopausal transition begins at age 47 and usually takes four years [10].

Endocrinologic and Biochemical Changes

The reproductive system responds to division of cells and tropic signals, which are produced by steroid hormones (estrogen & progesterone). Estrogen is a generic term for three hormones-estradiol, estrone and estriol, in which estradiol is the most potent and plentiful hormone produced primarily by the ovaries. Progesterone is secreted by the corpus luteum through stimulation of luteinizing hormone by the anterior pituitary gland [11]. Reproductive aging is associated with a reduction in the fixed number of germ cells within the ovary [12]. As women age, they experience accelerated follicular loss, which becomes depleted at menopause [11]. This accelerated loss corresponds with increased Follicle Stimulating Hormone (FSH), decreased inhibin production, and slightly elevated estradiol levels. After menopause, production of estradiol is drastically reduced and secretion of estrone is also diminished. The ovaries respond to the high FSH level by recruiting partially developed follicles, which depletes follicle reserves and lowers the progesterone level. In addition to the changes noted in the ovaries, the uterus allows proliferative growth of the endometrium because of the increased anovulatory cycle [11]. The hallmark of menopausal transition is a monotropic rise in FSH [12].

Neurobiology of Aging

Research has shown cognitive decline is seen with normal aging and the lack of estrogen contributes to this process [13]. Estrogen receptors are well-distributed in the brain and influence women's cognitive functioning, pain, mood, and fine motor skills [14]. In addition, the hippocampus and prefrontal cortex, which are responsible for memory, are also rich in estrogen receptors. Estrogen appears to have neuroprotective actions in relation to some neurocognitive conditions including dementia, stroke, Parkinson's disease, and Alzheimer's disease [15]. Hence, decline in estrogen during menopausal transition has been reported to have significant neurophysiologic effects on women's cognition [14,16].

Culture

Research has demonstrated that symptoms and views about reproductive aging vary with cultures. Vasomotor symptoms were found to be lower in women from Asian countries compared to women from European countries and the U.S. [17]. Asian American women, including Chinese, Japanese, and Korean, experience fewer symptoms and shorter duration of vasomotor symptoms compared to Caucasian, African American, or Hispanic women [17,18]. Japanese women also experience chilliness and shoulder stiffness more often than hot flashes [19]. Blacks or African American women reported the most total symptoms [18] and more vasomotor symptoms [17], along with vaginal dryness [18]. Among Portuguese women, non-specific psychological symptoms are more prevalent than vasomotor and urogenital symptoms [20]. In addition, Asian American women were noted to have lower numbers and severity of cardiovascular symptoms compared to African American, White, and Hispanic women [21].

Culture also dictates how women view their transition to menopause. In Japanese women, menopause, or konenki, is not a major issue, rather it is a period of regeneration and renewal [19]. An interview of 27 Hispanic American women suggested they viewed menopause as a change of life, a female issue that should be kept private, an opportunity to be optimistic that symptoms will eventually end, and that the presence of family support would make this transition much easier for them [22]. Among shamanic cultures, including Mayan women and Cree women of Canada, it is believed that women must enter menopause in order to access their healing power, at which time they become healers and priestesses [22]. An earlier study reported that menopausal transition is a hidden experience for Korean women where symptoms are ignored or endured.

Animal Models for Menopausal Transition

There are several studies using animal models of human menopause. These animal model studies serve as basic discovery that could provide preclinical data to predict outcome in relation to clinical issues related to women's menopausal health [23].

Defining Attributes

Defining attributes refer to the list of characteristics of the concept that repeatedly appear [4]. Three attributes of menopausal transition were noted based on the review of definitions and literature. The attributes are period of change in a woman's normal reproductive continuum, approaching reproductive senescence, and rising FSH level. Menopausal transition is part of a woman's natural reproductive continuum. It is the progressive period of change in a woman's life cycle, which normally occurs with aging [3]. This period involves endocrinologic and biologic changes as women approach menopause. The second attribute of menopausal transition is approaching reproductive senescence. Ovarian senescence, which represents the loss of cell division and growth [24]. Menopausal transition is distinct from perimenopause in that perimenopause covers the entire reproductive period before menopause, which could take as long as 10 years, whereas menopausal transition is the time before the FMP. Lastly, the literature reports that a rise in serum FSH level is an endocrinologic hallmark of menopausal transition [12]. One of the earliest signs of reproductive aging is the consistent monotropic rise in serum FSH, which is temporary related to accelerated loss of primordial ovarian follicles [12].

Model Case

Model case is an example case that demonstrates all the defining attributes of the concept [4]. Below is an example of a model case.

Diana is a 50-year-old woman who has gone to her physician's office because of night sweats and vaginal dryness. Her Nurse Practitioner (NP) obtained Diana's history and physical examination and noted that she is married with 3 children and denies any surgery or use of contraceptives. According to Diana, she began noticing that in the past year her menstrual cycle has been very erratic. Her last menstrual period occurred a week ago; however, the prior one was about two months ago. She also expressed waking up at night sweating. The NP sent her for labs, and the results came back as negative human chorionic gonadotropin, serum FSH- 22.1 mIU/ml, and anti-Müllerian hormone (AMH) - 0.5ng/ml.

Diane's case is an example of a model case. Diane's symptoms of night sweats, vaginal dryness, and declining hormonal levels all signal that she is going through a period of change from her normal reproductive continuum. Although she is still having a menstrual period, it is becoming erratic, and she is moving towards the ovarian senescence stage (before final menstrual period). The serum FSH level is also increased from a serum FSH level of <7 mIU/ml, considered a normal level during reproductive years [25].

Additional Cases

Related Case

Related cases are instances similar to the concept being reviewed but are referred to by a different name and do not contain all the attributes [4]. Below is an exemplar of a related concept-induced menopause.

Lea, a 42-year old female, reported to a local ER having flank pain and pelvic pressure. Eight months ago, Lea carried her third pregnancy and delivered vaginally. The nurse practitioner performed a history and physical assessment, and all laboratory findings were normal except elevated estrogen and WBC. With further evaluation, Lea was diagnosed with hyperplasia and underwent a total hysterectomy.

Induced menopause is an example of related case. Lea's hysterectomy (removal of the uterus) put her straight into menopause without going through menopausal transition. This was not a normal reproductive continuum with the removal of the uterus.

Contrary Case

A contrary case is an example of "not the concept" [4]. Below is an example of a contrary case.

Mark, a 60-year-old male, came to the clinic asking to speak with a male Nurse Practitioner (NP) privately. He stated that he is feeling under the weather, irritable, has gained 60 pounds in the last six months, has brain fog and decreased libido. He requested a prescription for Viagra to help him. The NP performed a history and physical examination and sent him for laboratory tests. Upon review of his lab results, it was noted that his testosterone level was decreased with no other abnormal findings noted. The NP spoke with Mark about his results and let him know that he could be undergoing andropause transition.

Andropause transition is not similar to menopausal transition; rather, it can be considered the opposite of menopausal transition. Mark is a male gender and will not undergo the normal female reproductive continuum including menstrual cycle. Even though men have reproductive systems, their anatomy and physiology are different from women. Women's reproductive aging is tied to a decline in estrogen and progesterone, whereas men can produce testosterone, the male sex hormone, well into their 80s. While both menopausal and andropause transitions may manifest symptoms, they are related to different and specific sex hormones.

Antecedents and Consequences

Antecedents refer to events that must take place prior to the occurrence of the concept [4]. The literature noted that for menopausal transition to occur, it must be preceded by approximately 35 years of a regular and predictable menstrual cycle [12]. This means that a woman must have all her reproductive organs intact in order to have a continuous menstrual cycle, excluding the time of gestation. In addition, no organic conditions may be present that may predispose a woman to premature menopause. Physiologically, hormonal levels will continue to decline throughout the woman's lifespan. Consequences refer to events that take place as a result of the occurrence of the concept [4]. Symptoms experienced by women during menopausal transition may affect their quality of life and well-being. Emotional distress is related to erratic and high levels of estradiol [10]. In addition, a decrease in estrogen levels noted during menopausal transition is associated with adverse health indicators, including cardiovascular disease and osteoporosis [15]. It is well-established that decreased levels of estrogen increase a woman's risk for fracture and cardiovascular disease. Increased RANK ligand and decreased Osteoprotegerin (OPG) expression are responsible for osteoporosis, which leads to an increased risk of falls among older women [10]. Risk of cardiovascular disease during transition to menopause is attributed to dysregulation in lipid and glucose metabolism and body fat redistribution leading to abdominal obesity [26]. Histological changes in the endometrium during menopausal transition increase the risk for endometrial hyperplasia and endometrial carcinoma [27]. Loss of estrogen in the brain during transition to menopause has been shown to contribute to an increase in late-life cognitive impairment, including dementia, Parkinson's disease, and Alzheimer's disease among women [15].

Empirical Referents

Empirical referents are the means or ways in which to recognize or measure the defining characteristics of the concept [4]. The first attribute of the concept is the period of change in a woman's natural reproductive continuum. Since menopausal transition goes along with aging, knowing the woman's chronological age is the easiest way to identify women at this stage. Some physical changes, such as appearance of wrinkles and greying hair, are also signs of aging. However, since chronological age and physical signs do not always determine a woman's reproductive age, there are also measurable physiologic changes occurring within a woman's body that may indicate that this period of change is happening. The literature has also identified certain symptoms that woman may experience that are associated with menopausal transition. These symptoms are related to irregular menstrual pattern; vasomotor, psychological and/or cognitive, and sexual dysfunction including vaginal dryness; decreased libido; and dyspareunia [10]. Vasomotor complaints are the most reported symptoms of menopause and include hot flashes and night sweats. Women may also report increased irritability, mood swings, depression, poor concentration, and poor memory. Other symptoms include headache, dizziness, palpitation, urinary incontinence, dry skin, sleep disturbances [10] and/or excessive hair growth [28]. The second attribute could only be recognized through self-report. Since the literature has described the age frame for when menopausal transition is occurring, there can only be an estimate as to when this final menstrual period will be. Although laboratory information may be helpful in assessing a woman's progress toward menopause, there is no laboratory test that can identify exactly the time of a woman's FMP.

Changes in hormone levels are the more objective parameter to identifying a woman's reproductive stage. Serum FSH level is the hallmark of menopausal transition. Other laboratory tests including decreased estradiol and inhibin levels, all of which signify major endocrinologic changes occurring. Additional markers of ovarian aging are also identified as including the Anti-Müllerian Hormone (AMH) and Müllerian Inhibiting Substance (MIS) [13]. These two markers are produced by granulosa cells of all follicles, which may be the earliest and most effective way to measure a woman's progress toward menopause [13]. There are several tools found in the literature that assess women's symptoms during menopausal transition. The Cognitive Symptom Index for Midlife Women is a 20-item survey that assesses the three domain cognitive symptoms of women during menopausal transition [16]. This was derived from the Midlife Women's Symptom Index, a 71-item survey developed by the same author [29]. The Greene Climacteric Scale is a 21-item scale that measures psychological, physical, and vasomotor symptoms before or after menopause [30].

Derived Definition

A definition of menopausal transition is developed because of ambiguity in how the concept is currently defined in the literature. Based on the review of the literature on the definition, its uses, and comparison of related concept, menopausal transition is defined as, a period of change in a woman's normal reproductive continuum occurring as she approaches reproductive senescence that is hallmarked by rising FSH.

Conclusion

An aging population triggers the need to understand concepts that are likely to surface, and one of these concepts is menopause. The concept of menopausal transition has relevance to every woman worldwide. As the number of older women grows, there will be a need for healthcare providers or health professionals to explain this period of life transition to women and their families. Many health professionals will be involved in the care of women during this transition stage. As healthcare providers, nurses assist women in optimizing their health and well-being during this period. Gaining an understanding of menopausal transition gives us insight on the attributes of the concept. This provides us with the armamentarium needed to monitor women in transition for some of the potential consequences and to promote preventative strategies. Since the majority of the nursing healthcare workforce worldwide are women, understanding the concept may also enhance their own transition. From a research perspective, there remain many opportunities for nurse scientists to fill in the gaps in literature on menopausal transition, as there is still much to learn about the female body.

In summary, menopausal transition is a significant phase in a woman's life where her normal biological and reproductive milieu undergo substantial changes. Increasing knowledge about the symptoms and consequences of menopausal transition will not only benefit patients and women worldwide, it will also benefit healthcare professionals in caring for these women.

Conflict of Interests

We have no known conflict of interest.

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