

## Screening as Secondary Prevention: A Concept Analysis

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### Abstract

**Background and Purpose:** A concept analysis should occur when there is a deficiency in understanding a concept. The intent is to develop further the concept for a thorough interpretation and use of the concept throughout the literature. Screening as secondary prevention is clarified for future use in nursing practice.

**Methods:** The Walker and Avant method was used for this concept analysis.

**Results:** Clarification of Screening for secondary prevention

**Implications for Practice:** This concept analysis will enhance communication between healthcare professionals, including nurses, providers, public health representatives, and other healthcare staff, and the patients and populations with whom they work to eradicate obstacles to screenings for health and wellness. This will ultimately amplify nursing practice and education to help nurse's better address patient health.

**Keywords:** Screening; Secondary Prevention; Concept Analysis; Improved health outcomes

### Introduction

Healthcare screenings, also known as secondary prevention, are utilized in most healthcare settings. Artinian (2000) explores the implications for clinical nursing practice regarding screenings, which consist of:

- Increasing the knowledge of illnesses needing early detection
- Nursing further educates patients on the importance of completing screenings promptly
- Educating patients on the correct definition of secondary prevention
- Assisting patients with screenings
- Knowledge of reducing and managing controllable risk factors
- Lifestyle modifications
- Using early detection methods to facilitate early cost-effective treatment

However, the concept of screening is not always used appropriately within the nursing field. Patients are often confused about the idea of screening. Nielsen and Lang argue the concept of screening itself is confusing, especially since the terminology is interchangeable [1]. For example, if family members understood the concept of screening, chronic illness could have either been prevented or resulted in better patient outcomes. Since the concept of screening is unclear, a concept analysis is necessary.

A concept analysis should occur when there is a deficiency in understanding a concept, to further develop the concept for a thorough interpretation and use of the concept [2]. Therefore, the primary purpose of screening as a concept analysis is to clarify the concept of screening for future use in nursing practice, enhance communication between nurses, patients, and providers, and eradicate screening obstacles. This will ultimately result in the further augmentation of nursing practice and education. To proceed with this concept analysis, a discussion of the uses and definitions found in the literature are used to assist in identifying screening concepts used in nursing practice.

### Significance of Screening to Healthcare

Screening in healthcare has been great, despite little discussion of screening until after 1945. Even then, the types of screenings were limited. Inexpensive, non-invasive testing; and prepared treatments first merged with the theory of screening following WWII allowing campaigns for population health screenings for populations to be initiated. The earliest screenings completed were by the United States Army for psychiatric disorders, post-WWII. The concept of screening was initiated by the United States Commission on Chronic Illness in 1951 [3]. It is important to note that the concept of screening was new during this time within other professions as well. For healthcare, screening is defined as the probable discovery of an unknown illness by conducting tests, examinations, or other procedures. Screenings are not meant to be diagnostic; if the screening displays a positive result, further evaluation and treatment may be indicated. The concept of screening has continued to evolve and now involves surveys and questionnaires to lab tests and procedures.

While screenings in healthcare have become the norm, the concept of screening has had tremendous significance for patients. As healthcare advances, screenings for secondary prevention are also increasing in that there are now plethoras of screenings available/indicated. Outcomes of screening have increased life expectancy and health awareness, resulting in better individual and population outcomes secondary to early detection [3].

### Definitions and Uses Found in Literature

#### Definition

To gain a thorough understanding of the definition of screening,

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the Oxford English Dictionary (OED) was utilized. The OED has four definitions, but only two of the definitions were applicable to screening uses. "1. To protect, conceal, or divide, and related senses. 2. To shield or protect (someone or something) from danger, harm, especially to preserve or save someone from something." [4]. In healthcare, the term screening suggests an analyzing method for an individual patient through history, diagnostic tests, and physical exams conducted on asymptomatic individuals to identify asymptomatic disease processes to prevent or slow the progression of chronic illness [1,5].

The concept of screening as secondary prevention is used in a multitude of disciplines including law enforcement and military, social work, education, bioscience, and the innovations bioscience screenings has created within healthcare are further discussed here. To fully understand the concept of screening in healthcare, a review of these uses throughout the literature is indicated [2].

## Uses

**Military and Law Enforcement :** The United States Army was one of the first organizations to utilize the concept of screening to ensure their officers are fit for duty before entering the military [3]. The concept of screening in the military is defined by various testing to conclude if the service member is healthy enough to serve and protect the United States. Jacobs and the National Research Council discuss that screenings help ensure that members of law enforcement and military service members have optimal physical and mental health to guarantee the ability to handle difficult situations with ease [6, 7]. Both law enforcement and the military conduct psychological, medical, and physical tests to affirm they can perform their duties. Screening is also used to detect inconsistencies and prevent anyone considered unfit to conduct the required task, thus preventing poor outcomes from the inability to physically or mentally perform required duties. The types of screenings the United States Military and Law Enforcement utilize are listed below.

- Medical screening questionnaires
- Medical evaluations that include biometrics such as height, weight, waist circumference, BMI, cholesterol, and blood glucose levels
- Vision and hearing screening exams
- Urine and blood screening tests, including pregnancy tests if indicated
- Drug and alcohol screening
- Physical Fitness evaluations to assess balance physical ability, endurance, and strength of muscle groups and joint maneuvers.
- Mental health screening assessments through cognitive and psychiatric evaluations

**Bioscience:** Bioscience is a vast field involving all living things, and screening focuses on targeting the organism and facilitating a plan to improve the overall health of a specific organism. This ranges from humans to leaves on trees, organic properties in food, screening animals for diseases, testing nutrients in the soil for ailments, and discovering methods to improve outcomes for all living organisms [8]. Bioscience screening includes testing for broad health markers of living organisms such as bacteria, genetic mutations, tumor markers, and food properties. Attene-Ramos posit how screenings in the bioscience fields are utilized for testing various biological behaviors in prototype organisms, cellular pathways, or at the molecular stage. In bioscience, screenings are used to identify ailments in biospheres and ways to improve the health of all living organisms not just individually, but also in how the organisms

interact with other biospheres to further promote health and have better outcomes. For example, Cabral discusses how bacteria detected in a stream of water assists in evaluating the relationship and behavior of the hosts within the environment the bacteria are thriving in [9]. It is studied in how it affects the environment's vegetation and how it affects animals and even humans. If fecal matter is detected in the water, then further testing or screening is needed to determine if the bacteria is *Escherichia coli* or another harmful bacterium that could be detrimental to other living organisms (Cabral). Once those results are determined, guidelines are placed based on the relationship the bacteria have with the environment. It is through the interactions within the biospheres a conclusion is made regarding the outcomes of the interactions. Therefore, a screening occurs based on the outcomes of the relationships interacting between all living environments. In summary, screening in biosciences is to detect something specific to determine if a phenomenon is harmful, helpful, or beneficial to living organisms through the exchanges that occur and, therefore, recommend a practice or guideline based on the completed screening results.

**Innovations:** The concept of screening within the bioscience field also has a relationship with the healthcare field as it involves testing for various ailments among humans. Health care screening focuses on discovering an illness and implementing interventions for patients to restore health and slow the disease process for quality health outcomes through utilizing bioscience techniques. For example, [10] research discovered that by screening for the lactic acid bacteria (LAB), the LAB characteristics or properties of LAB were shown to improve associated facets that obesity causes, such as reducing cholesterol levels. They found that three strains of LAB lower cholesterol absorption from the gastrointestinal tract, thereby decreasing the cholesterol concentration within the abdomen and thus improving obesity symptoms. The LAB properties are available in a probiotic that providers can recommend to their patients to aid in lowering cholesterol levels, especially in patients who have obesity [10]. The COVID-19 pandemic is another example. The Centers for Disease Control and Prevention (2021) forms partnerships alongside other researchers to develop screening for Covid-19-specific DNA, which results in the implementation of the vaccine, testing, pharmaceuticals, and protocols based on what the research reveals to improve patient outcomes [11].

## Social Work and Education

Both social work and education fields use the concept of screening to identify areas where intervention may improve outcomes. Social workers utilize screenings to identify concerns with mental health, behavior, physical and emotional abuse or neglect, substance abuse, and socio-economic deficiencies. Screenings in social work are conducted to verify the client or patient has optimal outcomes through the initiation of early intervention [12]. Similarly, educators in public school systems apply similar screenings for children and adolescents who may benefit from early intervention to ensure that learning outcomes are met. Educators also screen for behavioral and mental health concerns because mental and behavioral disorders can impair the individual's ability to perform the required learning outcomes [13]. Social workers and educators use screenings to detect and implement a plan to prevent adverse effects to further promote academic success [12-14].

In schools, additional screenings are also conducted to identify learning disabilities to ensure children can receive the resources needed to adequately advance academically. The National Education Association (NEA, 2020) reports that educators started screening

students for academic success with the use of standardized testing, starting as early as 1838, but it was not until the 1920s that standardized testing became the norm in the United States [15]. It was not until 2001 that the No Child Left behind Act required that children read at the appropriate grade level, within the third-grade year [16]. The No Child Left behind Act required more assessment of the abilities and capabilities of each child to identify those in need of additional assistance starting in kindergarten. This, in turn, allowed educators to understand which interventions would be needed to ensure academic success. According to Partnerships for Action, Voices for Empowerment [17], it was not until 2021, that the law in Washington State mandated educators to screen school-age children for dyslexia, passed in 2018, and implemented to support literacy. It is important to note that other states have recently adopted similar laws to support literacy in the United States. Petscher suggest that teachers should implement screenings to detect at-risk children and adolescents in danger of not meeting their grade level education requirements, which is completed by assessments prepared by the State the student is living in. Once educational screenings are completed, teachers and parents implement an Individualized Education Plan (IEP) to ensure the child achieves grade-specific goals and collaborate with a social worker if the student has more requirements beyond educational demands [13].

### Social Work and Education Collaboration

Despite the screening methods utilized because of the No Child Left Behind Act, there were still children struggling to meet academic requirements. Educators recognized that academic success went beyond academic screening results. Students struggling with learning disabilities, mental health and behavioral concerns, abuse and neglect concerns, and socio-economic concerns negatively impact a child's ability to learn [12]. To further meet student needs for academic success the public schools utilized social workers to provide resources to students who demonstrate further need or risk promoting success in the classroom and, in society as well. The School Social Work Association of America [14] discusses the role and services social workers provide and implement for students within the public-school systems. The role and services social workers provide within the public-school systems are as follows:

- Crisis intervention for students and equip teachers
- Develop intervention techniques to promote academic success
- Conflict management and assisting the child with navigating emotions and behavior through counseling, and assessing mental health, behavioral, and abuse concerns
- Providing and utilizing school and community resources to parents with children in the specific public school system
- Participate and collaborate in education planning meetings
- Act as a liaison to school staff, school districts, and within the community and provide training and meetings to better assist students with higher needs

### Defining Attributes

After reviewing the literature, the notion of screening for secondary prevention was found to have common characteristics or attributes relating to the concept of screening. Walker and Avant determine that defining the attributes of a concept involves certain elements that repeatedly appear in the literature [2]. The attributes of screening include a) assessment and evaluation with b) intent to identify areas of

concern and c) mitigate negative outcomes or improve outcomes.

### Antecedents

Antecedents are experiences or events that must transpire before the concept is established [2]. History of poor outcomes is an antecedent to screening in various fields. The antecedents for screening in all fields are a) history of poor outcomes, b) recognition of the potential for better outcomes, and c) identifying a system of early detection and intervention to change outcomes. Prior to health screening post-WWII, there were widespread mental health and disease concerns among populations resulting in negative consequences [3]. Overall, the antecedents leading to the development of screening often consisted of harmful effects or poor outcomes on individuals and populations. The nursing field has visualized firsthand the impact of deficiencies of the screening concept by observing adverse outcomes in populations and individuals, which is further discussed below.

### Antecedent example

The Adverse Childhood Experiences (ACEs) study was conducted after recognizing that morbidity and mortality secondary to disease processes were not equally distributed throughout the population [18]. The ACEs study was a result of the acknowledgment of poor outcomes. [19] Reports that ACEs are connected to chronic health conditions in adulthood, and ACEs can be prevented. ACEs result in dangerous stress that ultimately not only changes brain and body development but also the response to stress. Those that had ACEs were at high risk for ailments such as diabetes, asthma, cancer, depression, smoking and substance abuse, poor education and employment opportunities, and a continuation of ACEs for generations to come [19]. A strong correlation between adverse health outcomes and traumatic experiences in childhood was identified. This correlation was recognition of the potential for better outcomes. The screening tool used to identify distressing childhood events is a system of early identification. Due to the disruption of health and poor outcomes related to ACEs, there was recognition that early detection and intervention from ACEs would overall change outcomes by providing the tools and screenings to identify those with ACEs and mitigate the negative consequences in hopes of preventing ACEs altogether by a thorough screening tool to identify those at risk for ACEs.

### Consequences

After a concept is established, it produces an effect or consequence [2]. The a) protection or shielding of the individual from a phenomenon from an adverse event leads to the b) preservation and even restoration of the individual. Once the concept of screenings was developed, outcomes for individuals and populations improved, resulting in overall health improvement.

### Consequences example

The U.S Preventative Services Task Force [20] was formed in 1984 to further promote health through the utilization of various screenings. New therapies, specialties, protocols, guidelines, and even education were developed due to screenings for discovering new illnesses [3]. The USPSTF (2021) has created guidelines and protocols for various screenings. As a result, those who screened positive for being at risk received prompt care or interventions to address the concerns for which they were screened. These interventions are consistent with the shielding or protection that is a consequence of screening. Due to the USPSTF creation of screenings, there are significant increases in life expectancy due to detecting a phenomenon early and implementing a plan or treatment to improve or slow the progression [21]. Increases

in life expectancy are an example of the preservation and restoration of the individual. The screenings the USPSTF (2021) recommends are listed below; please note this is not an exhaustive list.

- Abdominal Aortic Aneurysm Screening (AAA) for men who have EVER smoked aged 65-75
- Breast Cancer Screening for women aged 50-74
- Cervical Cancer Screening for women aged 21-75
- Depression Screening for the general adult population, postpartum, and children
- Cardiovascular Screening for the general adult population
- Hepatitis C Screening for adults aged 18-79
- HIV Screening for those considered at risk ages 15-65
- Lung Cancer Screening for individuals who has a 20-year smoke pack history aged 20-80 years
- Diabetes screening for the general adult population
- Hypertension screening for a general adult population
- Osteoporosis for women aged 65 and older

### **Education, Social Work, Law Enforcement, Military, and Bioscience**

Education and social work fields have seen an improvement in meeting the needs of adults and children within the community and classroom [12-17]. Law enforcement and the military can receive what they need for ideal job performance, and thus the result is a safer community, nation, and world [6-7]. Bioscience and healthcare can detect phenomena from all living organisms by examining how they interact with the host and environments in order to form guidelines to prevent, protect, and restore health [8-11]. The consequences of screening consist of individuals and populations having better outcomes in all biosystems. Nursing pursues favourable outcomes through screenings by detecting, protecting, and early intervention.

### **Cases**

Examining cases is another crucial component of this concept analysis. Exploring cases facilitates determining what qualifies as the defining attributes of the concept itself and what is not eligible as defining attributes for the concept [2]. A further discussion of the cases is presented below.

### **Model case**

A model case illustrates that the concept demonstrates all the attributes correctly within the concept [2]. For example, a 24-year-old female with a strong family history of breast cancer sees her provider who orders a genetic test to screen for the BRCA1 and 2 genes, she is asymptomatic. When she is found to be positive for BRCA1 and 2 she is still asymptomatic for breast cancer. She completes annual breast cancer screenings to detect malignancy, with the understanding it would be identified in the earlier stages if it occurs. As a result, the patient will have a higher likelihood of better outcomes than other family members who did not do regular breast cancer screenings. This patient completes her screening mammogram, revealing a small mass in the left breast. After diagnostic testing and imaging, it was conclusive that she has stage 1 breast cancer without metastasis. Since she does have the BRCA1 and BRCA2 genes, she is choosing to undergo more invasive interventions by having a bilateral mastectomy to further

prevent breast cancer from worsening. She also elects to have a total hysterectomy because the BRCA 1 and 2 genes are also related to other female-related malignancies such as ovarian cancer. Through utilizing regular breast cancer screenings with early detection of the phenomena of breast cancer, thereby protecting this patient through early interventions and implementing a plan of eradicating the potential for breast cancer, thus resulting in quality care outcomes, as she is now cancer free and due to the surgeries unable to get breast or ovarian cancer.

### **Borderline case**

A borderline case is when the concept contains some defining attributes but not all of them [2]. Using the example from above of a 24-year-old woman with a strong family history of breast cancer. However, when she sees her provider, she is not asked about her family history and does not disclose this history of breast cancer. When she reaches age 40, she opts to get an annual mammogram based on her family history. When her screening is positive for breast cancer, she opts for minimally invasive treatment and continues with annual mammograms following resolution.

### **Related case**

A related case is a concept related to the concept itself but does not encompass all the defining attributes. They are comparable and linked to the concept [2]. An example of a related case is a 40-year-old male who presents to his primary care provider for acute back pain after falling backward while participating in a heavy weight training exercise regimen. The provider does a physical examination and orders an x-ray. The x-ray did not show any bone abnormality, but given the severity of his back pain and bilateral leg weakness, the provider orders an MRI, and the patient completes the MRI. The MRI is conclusive for a herniated disc but incidentally reveals evidence of a right kidney mass. Once the provider reviews the results, he orders additional testing to examine the patient for kidney cancer as the imaging was highly indicative of kidney cancer; in addition to referring the patient to nephrology and oncology. The patient undergoes surgery to remove the kidney and starts chemotherapy to eradicate any remaining cancer cells and prevent metastasis. The kidney cancer is found in the early stages, and after he completes his treatments, additional testing reveals he is cancer free. Therefore, this patient has quality care outcomes through early detection and intervention, thereby protecting the patient from poor outcomes. However, this is a related case in that the original screen that identified the cancer was an incidental finding; the patient was not screened for kidney cancer, and screening for kidney cancer is not routine.

### **Contrary case**

A contrary case is an example or opposite of the concept and contains no defining attributes [2]. Again, using the example from above of a 24-year-old woman with a strong family history of breast cancer. The woman decides that healthcare screenings are unnecessary, thereby forgoing any early detection of breast cancer. When she notices a mass, she goes in for further evaluation and following the diagnosis of advanced breast cancer receives treatment. Due to the severity of the breast cancer, she is at risk of metastasis and may not live more than 18 months from the time of diagnosis. Hence, the patient has poor outcomes due to an absence of early detection for a phenomenon.

### **Invented case**

An invented case is exhibited through the concept being applied out of context through an individual's personal experience [2]. Scientists are concerned about the health of the multiverse because

of the decrease of biodiversity we have witnessed on Earth. Scientists create a screening tool to capture gasses from each universe and bring it back to earth to evaluate the gasses for properties necessary to sustain each universe. If scientists find that a universe is missing a specific property, they identify the quantity of the element needed and send it back to the universe to replenish the property and restore the health of the universe.

### Illegitimate case

An illegitimate case is the inappropriate use of the concept (Walker & Avant, 2019). The OED (2017) defines screening as an illegitimate use of the concept of screening. The OED (2017) defines screenings as concealing or keeping something from an individual or population. Suppressing a phenomenon from an individual or population could potentially lead to harm. Therefore, it does not protect the individual or population. For example, by concealing the patient's breast cancer screening results or misinforming the patient of necessary breast cancer screening tests, the patient is at risk for poor outcomes, and not initiating interventions leads to adverse effects. Therefore, this is an illegitimate case because the use of this definition of screening is not detecting a phenomenon but instead conceals the information from the patient; in conjunction with not implementing a plan or intervention further protecting the patient or population, therefore is an illegitimate case.

### Empirical Referents

After reviewing the cases, a concept analysis's closing step establishes the empirical referents. Empirical referents are classes or categories of the actual incidents that prove the manifestation of the concept itself [2]. The concept of screening displays an accurate depiction of screening specifically for depression in primary care. Costantini confer how depression substantially influences individuals worldwide [22]. It is important to note that the World Health Organization (WHO, 2021) states that depression affects 280 million people worldwide and is now a prominent source of disability [23]. It is estimated that one in five people suffer from depression throughout their lifetime [22-23]. Due to increases in depression prevalence, and poor outcomes from depressive episodes such as suicide, implementing a screening tool called the PHQ-9 across various primary care settings and mental health providers is necessary. The PHQ-9 is now the most reliable screening instrument for depression. The PHQ-9 screening tests for depression in two steps depending on the severity of the depression symptoms the patient is experiencing. The PHQ-9 is very effective in determining moderate to severe depressive disorder concerns once the patient completes the screening, the healthcare provider can implement interventions to prevent poor patient outcomes, thus improving their health altogether [22]. The attributes of the concept of screening are evident within the PHQ-9 in that it is detecting a potentially major depressive concern, where the provider and healthcare team can further implement early interventions to protect the patient from poor outcomes from depression and ultimately optimize their health.

### Conclusion

For healthcare to appreciate the concept of screening, a concept analysis must occur. This concept analysis on screening explores the purposes and uses, definitions, attributes, antecedents, consequences, cases, and empirical referents relating to screening. As previously mentioned, the concept of screening has uses in various fields, such as military and law enforcement, social work, education, bioscience, and bioscience innovations within healthcare. The concept of screening within these fields has similar characteristics or attributes, which also

apply to nursing. When nursing utilizes the concept of screening, nursing must realize that screening detects a phenomenon and, through early intervention, protects the patient from poor outcomes. The goal nursing is always to strive to improve outcomes, which is often done using the screening process. Nurses must contribute to detecting various phenomena within patient populations and communities. Once nursing realizes the genuine concept of screening, nursing will be better equipped to protect patients and populations from phenomena by providing concrete patient instruction and intervention. Clarifying the meaning of screening encourages the further augmentation of nursing practice and education, which adds significance to evidence-based practice and nursing theory.

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