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Research Article

The Social-Ecological Model: Faith and the Targeted Prevention and Treatment of Cardiovascular Risk in Low- and Middle-Income Countries

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Abstract

This paper examined how the use of the social-ecological model may facilitate best practices while integrating faith in targeted prevention and management of cardiovascular risk in low- and middle-income countries as most faith-based health institutions in developing countries promote the integration of faith in their population-level disease prevention programs. Given the rigid practice of faith in low- and middle-income countries, we recommend the adoption of the social-ecological model, which emphasizes the consideration of the various levels of influence (such as intrapersonal, interpersonal, organizational, community, and public policy) and the concept that people's social environment influences their behaviors. Our recommendation is based on studies from diverse cultures that suggest that targeted prevention and management of risk factors, such as hypertension and hypercholesterolemia, might reduce morbidities and mortalities from cardiovascular diseases. This model is sustainable in low- and middle-income countries and aligns with the patients' relationship with their creator and their neighbors while promoting best practices.

Keywords: Social-ecological model, Cardiovascular risk factors/prevention and management; Faith and Health, Patient's Relationship to God and Humanity

1. Introduction

Low- and middle-income countries, mainly less-developed African countries are going through unprecedented epidemiological evolutions categorized by abject poverty, urbanization, and changing lifestyle factors. Epidemiological evolution describes a process that tends to stimulate a shift in the pattern of disease and mortality. It is often characterized by a change in infectious diseases and nutritional deficiencies to chronic diseases (Belue et al., 2009). For instance, a change from a high rate of infant and child mortality, periodic famine, and pre-transitional diseases associated with infections to degenerative and chronic diseases (post-transitional diseases such as those associated with diet, sedentary lifestyle, medical access, smoking, and other behaviors might cause cardiovascular disease (CVD), cancer, chronic lung disease, and diabetes (Reddy &Yusuf, 1998; Olshansky, 1986).

According to the World Health Organization (2012), about 60% of deaths worldwide were due to non-communicable diseases. In 2005, about 17.5 million people died of CVD, which is 30% of all global deaths and about 80% were from low- and middle-income countries (WHO, 2014). Yach, Hawkes, Gould, & Hofman (2004) assert that research studies projected that mortality by CVD would increase by 120% for women and 137% for men in 2020. This is alarming because low-and middle-income countries are still grappling with the devastating effects of infectious diseases. Thus, this double burden of communicable and chronic non-communicable diseases has a long-term public health impact as it weakens the already poorly managed healthcare systems (BeLue et al., 2009).

The purpose of this paper was to examine how the use of the socio-ecological model may facilitate the integration of faith through targeted prevention and management of cardiovascular risk in low- and middle-income countries. Studies from diverse cultures suggest that targeted prevention and management of risk factors, such as hypertension and hypercholesterolemia, may reduce morbidities and mortalities from cardiovascular risks.

Most faith-based health promotion facilities support the integration of faith in population-level disease prevention programs. This is probably because of the growing research database that establishes a relationship between religion, spirituality, and cardiovascular disease (CVD). Historically, most middle to low-income countries is highly religious, which explains why there is a link between religion, medicine, and healthcare among all population groups (Koenig, King, & Carson, 2012). Also, the strong links between psychosocial stressors, health behaviors, and cardiovascular health seem to suggest a conclusive link between religion, spirituality, and cardiovascular health or disease. Existing studies in the field of psychoneuroimmunology have shown the association between how people feel and how their physical health (the immune system) can be affected, which supports the mind-body relations as the core of psychosomatic medicine (The World Health Organization, 1998).

Even in the bible times, there seems to be a link between religion, spirituality, and health. For instance, Daniel, Hananiah, and Azariah declined to eat foods forbidden by Jahweh and instead asked for vegetables and water. For 10 days, they were allowed to eat only vegetables, and at the end, the guard was amazed at their appearance, and physical and mental health, compared to those who ate the royal foods (Daniel 1: 8-15).

We define religion as a set of beliefs, practices, and rituals associated with a Supreme Being, where the Supreme Being might be God, Allah, Sango, Amadoha, or a Higher Force in Western religious traditions, or Brahman, manifestations of Brahman, Buddha, Tao, or definite truth/reality in Eastern mores. Also, we describe spirituality as a transcendental reality, which is outside the confines of cultures, politics, religions, and egos (Seaward, 2018). Unlike religion, which is highly ritualistic and rigid, spirituality is personal, something people define for themselves (Lucchese and Koenig, 2013). Human spirituality is usually without rules, regulations, and accountabilities. One can be spiritual, but not religious. Most people proclaim to be spiritual in places where religion is not allowed. Thus, spirituality is seen as a non-divisive common human bond, in both religious and secular settings (Lucchese and Koenig, 2013). We must also note here that spirituality can include an individual's belief that there is nothing beyond the material world or the belief that there is no God or meaning beyond this life (The World Health Organization, 1998).

Like religion, human spirituality encompasses every phase of human consciousness, transcendence, self-reliance, self-efficacy, self-actualization, love, faith, enlightenment, mysticism, self-assertiveness, community, and bonding (Seaward, 2018). According to the World Health Organization (1998), human spirituality is something that is in complete harmony with the perceptual and nonperceptual environment. Ross (1995), identified the quest to find meaning, purpose, and fulfillment in life, the desire for hope or the will to live, and the need for belief and faith in oneself, others, and God as the three basic characteristics of human spirituality.

The question one has to answer here is, given that faith is both an aspect of religion and human spirituality, how can one's faith in something which is not scientifically verifiable such as

divine truth, philosophical doctrine, miraculous healing, value system, provide strength and direction in one's daily life? While this may provide confidence and direction in making healthy choices that may either prevent or delay the onset of cardiovascular disease, for others, there is the possibility that such faith or belief might hinder them from making healthy lifestyle choices. For instance, certain religious beliefs promote the concept of " it is well, leave everything in God's hands, be not dismay whatever betide," which in turn encourages the act of learned "self-helplessness" which is a difficulty that could include the feeling of helplessness because people feel they have no control over their lives and may therefore take less initiative and responsibility (The World Health Organization, 1998). Also, while people may have a passionate sense of spirituality, they may feel alienated from formalized religion and its practices, such as

a sense of alienation or inability to express this feeling of being connected to God or a Higher Force could limit people's ability to either make decisions or take targeted actions to prevent and manage cardiovascular risks.

Therefore, due to the subjective, and restrictive practices of faith in most low- and middle-income countries, we recommend the use of the social-ecological model in facilitating the adoption of faith in targeted prevention and management of cardiovascular risk. Our recommendation is supported by the evidence that the social-ecological model emphasizes various levels of influence (such as intrapersonal, interpersonal, organizational, community, and public policy) and the concept that people's social environment influences their behaviors. This model is sustainable in low- and middle-income countries and aligns with the patients' relationship with their creator and their neighbors while promoting best practices.

2. Literature Review

2.1 Faith and Health

Cultural competency in health and social care includes respecting differences in patients' cultural awareness and individuality, which consist of their language and religion. This can be implemented through health systems and institutions, training, models of care, and patient intervention (Kirmayer, 2012). Curtis et al (2019) posit that attentiveness to matters of cultural competency decreases health inequalities and promotes medical care because it allows health and social care professionals to provide services that are respectful of and responsive to the health beliefs, practices, and cultural and linguistic needs of different patients. There is no doubt that faith or spirituality is an important part of one's cultural identity as it has been identified as a factor that may influence patients' healthcare decisions and outcomes (Isaac, Hay, &, Lubetkin, 2017).

While the notion of the use of faith in health and social care is challenging, it remains an important concept. Its significance is revealed in the increased studies on the topic (Lucchetti and Lucchetti, 2014), as well as the recognition of faith and spiritual care in healthcare policy across the world (Weathers, 2018). For instance, the National Health Service (NHS) Scotland identified the incorporation of faith or spirituality as one of the essential components of holistic care in its educational guide for healthcare staff (NHS, 2009). Likewise, the government of Manitoba in Canada listed the integration of faith as one of the fundamental competencies for spiritual health care specialists (Manitoba's Spiritual Health Care Partners, 2017). Weathers (2018) asserts that several professional regulatory associations include the delivery of spiritual care in their recommendations and guidance to healthcare professionals. According to Weathers (2018), the International Council of Nurses refers to spiritual care in their Code of Ethics document (ICN, 2012). Correspondingly, in the UK, the Nursing and Midwifery Council (NMC) made references to spiritual care as one of their criteria for both pre-registration nurses and

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registered nurses (NMC, 2010.

In current surveys, 59% of British medical schools and 90% of US medical schools offer

courses or content on spirituality and health (Lucchetti et al., 2012). Similarly, 10.4% of Brazilian medical schools offer Spiritual Health courses while 40.5% of the schools have courses or content on spirituality and health (Lucchetti et al., 2012). While there is limited research data in most African countries on various governments' education policies on the inclusion of spiritual health education, the available studies indicate that religion influences the utilization of maternal health care services which is analogous to the influence of the selected social determinants of health (Solanke et al., 2015). In this regard, focusing on the social determinants of health without the integration of faith may not promote maternal health care in countries such as Ghana, Senegal, the Gambia, and Nigeria (Solanke et al., 2015). Therefore, special attention must be given to the issues of healthcare access among Muslim women by taking more practical steps to promote access to public sector health facilities in Nigeria (Solanke et al., 2015). Thus, it is essential to incorporate faith or spirituality into the social determinants of the health framework.

Regardless of the method of practice, ritual, or place of worship, religion and spirituality can play an important role in a people's life. While spirituality or faith may mean different things to different people, it is often about a belief in a supernatural power or something greater than ourselves, which entails our quest for a purposeful life. There are some health benefits associated with either being religious or spiritual, which include longevity, improved emotional state, enhanced immunity, reduced hypertension, minimizes suicide rate, reduced risk of disease, improved self-confidence and fitness, and a strong support system (Paul et al, 2001).

While some religious and spiritual beliefs may be empowering, some beliefs may be harmful to one's health. For instance, they may lead to the feeling of debilitating guilt or a sense of lack of self-efficacy. This may have several negative effects on one's mental health. Some religious groups may believe that one is possessed by demons or evil spirits when an individual is living with a mental illness or an unexplainable illness. Others may say that mental illness is a punishment for something you have done wrong. These beliefs are obstructive as they might either delay or stop the individual from seeking professional help for early intervention.

2.2 Targeted prevention and management of cardiovascular risk

Cardiovascular disease (CVD) is an umbrella term, which describes conditions affecting the heart or blood vessels. It is typically linked with a build-up of fatty deposits inside the arteries (atherosclerosis) and an increased risk of blood clots. It can also be connected with damage to arteries in organs such as the brain, heart, kidneys, and eyes (NHS, 2018). Coronary heart disease (angina, heart attacks, and heart failure), strokes

and transient ischaemic attack; peripheral arterial disease, and aortic disease are the four main types of CVD (NHS, 2018).

In 2005, cardiovascular disease accounted for 30% of an estimated 58 million deaths worldwide from all causes (WHO, 2007). This percentage is the same as that caused by infectious diseases, nutritional deficiencies, and maternal and perinatal conditions collectively (WHO, 2005). According to the World Health Report (2002), a significant percentage of these deaths (46%) were of people younger than 70 years of age who are in the more productive period of their lives. Furthermore, 79% of the disease burden was caused by cardiovascular disease (The World Health Report, 2002). Nearly 50% of the disease burden in low- and middle-income countries is caused by non-communicable diseases with CVD at the top of the list (Lopez et al., 2006).

A substantial percentage of this morbidity and mortality could be prevented using population-based approaches, and through the implementation of accessible cost-effective interventions, both for people with established diseases and for those at high risk of developing the disease ((Lopez et al., 2006). Although there is a notable advancement in cardiovascular disease treatment, the prevalence of new and recurrent coronary artery disease continues to increase and constitutes the primary cause of death in middle and low-income countries as well as in developed countries (Gaziano et al., 2011).

Even though the exact causes of CVD are not clear, both modifiable and non-modifiable factors that can increase one's risk of getting it, notable risk factors for CVD include high blood pressure (hypertension), smoking, high cholesterol (hypercholesterolemia, diabetes, inactivity, obesity, family history of CVD, and ethnic background (NHS, 2018; Perk et al., 2012). Age, gender, poor diet, and excessive consumption of alcohol are the other risk factor for CVD (NHS, 2018).

Targeted prevention and management of cardiovascular risk refers to specific preventive action and therapy that can either prevent the onset of CVD or reduce the speed at which the disease degenerates into complications (WHO, 2007). This approach involves the promotion of a population-level primary prevention program through the Framework Convention on Tobacco Control and the Global Strategy for Diet, Physical Activity, and Health (WHO, 2003). These initiatives will target common risk factors, which will make it easier for healthy people to stay healthy while enabling those with diagnosed CVD or at high cardiovascular risk to change their behavior (WHO, 2007).

Given the possibility that this strategy alone may not support some individuals with a high risk of developing CVD or with a diagnosed CVD, a combination of population-wide strategies and approaches that target high-risk individuals may be required to reduce the cardiovascular disease burden. The degree to which one strategy should be emphasized over the other depends on attainable effectiveness, as well as cost-effectiveness and availability of resources (Lopez et al., 2006).

2.3 Low- and middle-income countries

Low- and middle-income countries (LMICs) fall under different groups according to size, population, and income level (World Bank, 2021). Countries with low-income economies are those countries with a Gross National Income (GNI), of $1,025 or less in 2018 based on the calculation of the World Bank Atlas method (World Bank, 2019). The lower-middle-income economies are those countries with a GNI per capita between $1,026 and $3,995 while the upper-middle-income economies are those between $3,996 and $12,375. On the other hand, high-income economies are those countries with a GNI per capita of $12,376 or more (World Bank, 2019).

Presently, about 75% of the world's population lives in LMICs. In addition, 62% of the world's poor population lives in these economies. In the 1990s, over 6 in 10 people of the world's population lived in low-income countries, but today it is just about 1 in 10. This is mainly because countries, such as India and China, have transitioned from low-income countries to middle-income countries (World Bank, 2021). Middle-Income Countries contributed less than a fifth of the global economy (17 percent) at the commencement of the 20th century. However, by 2017, they contributed about 35 percent of the global economy, which is about one-third of the total global gross domestic product (World Bank, 2021).

Apart from political instability and rampant corruption, most LMICs have weak healthcare systems. For instance, out of the 75 countries that constitute more than 95% of child and maternal mortality, the average percentage of births attended by a trained or experienced health professional is 62%, which is about 10 to 100% (World Health Organization, 2019). UNICEF (2013) suggests that more women do not have money or health insurance coverage for this service than women with the resources to pay for the maternity care provided by a skilled health care worker. The non-availability of financial support or protection for the costs of healthcare services makes it impossible for about 100 million people to access quality healthcare services (World Health Organization, 2010). An effective healthcare system is an outcome of its trained and experienced healthcare professionals including the active participation of private health and social service institutions (IOM, 2001). For instance, in Taiwan, about 90 percent of the primary care and 70 percent of the country's hospital bed services are delivered by the private sector and the National Health Insurance companies (Tsai, 2014).

Another major characteristic of LMICs is low healthy life expectancy (HALE). According to Islam et al (2018), healthy life expectancy at birth is a significant measure of a country's health status and quality of life. Comparing Sierra Leone with 44.40 years of healthy life expectancy to Sri Lanka (67 years), Islam et al, (2018) attributed education, total fertility rate, physician density, gross national income per capita, health expenditure, economic freedom, carbon dioxide emission rate, freedom of the press, corruption perception index, and prison population rate as some of the factors for the large gap between HALE in Sierra Leone and Sri Lanka.

Typically, LMICs have the highest incidence and death rates of cardiovascular disease. The surge in prevalence and death that are associated with the large burden of coronary health disease is one of the outcomes of the epidemiological transition, which usually accompanies economic and social development (Gaziano et al., 2011). Unlike developed economies, the economic and social transformation in LMICs is occurring much more quickly in a post-industrial era due to economic globalization (Gaziano et al., 2011). The outcome of this rapid transformation is that the changes in risk factors and rate of disease occurrence are faster than the progress in healthcare networks, human resources, and infrastructure, which are needed to prevent and manage the onset of chronic diseases such as CVD (Gaziano et al., 2011).

Another identifiable feature of LMICs is that most people in these countries claim to be religious (Stastna, 2019). This seems to support Paul et al's (2001) assertion that religion flourishes most in extremely dysfunctional societies. On the other hand, there is a 0.7 relationship between religiosity and successful societies (Paul, et al., 2001). While acknowledging that the level of religiosity tends to vary from person to person or culture to culture, Paul et al (2009) assert that this is only popular in societies that have a notable rate of dysfunction where people are anxious about their daily lives to a degree that they begin to depend on their various gods for help in their daily lives. Paul et al (2001) posit that it is not the fear of death or God that pushes people to become religious, but exercising faith in God or a Higher Power is merely a psychological coping mechanism.

According to the 2009 Gallup Inc. Religion study, which surveyed about 1,000 people in each of 114 countries, nations with less than $2,000, 95 percent per capita stated that religion was an important part of their daily lives. For instance, 99 percent of respondents from Bangladesh, Niger, Malawi, and Yemen agreed to be religious while Sweden (17 percent), Denmark (19 percent), Japan (24 percent), and Estonia (16 percent) where religion was suppressed under the former Soviet regime had some of the weakest responses (Stastna, 2019).

Norris and Inglehart (2014) linked the pattern of higher religious commitment in poor places to the overwhelming differences in existential insecurity, that is, the level of safety and security people feel as they go through their daily lives. For instance, feelings of vulnerability such as the perpetual threat of untimely death from hunger, war, and disease, tend to push people to religion, which in turn offers hope and lessens people's anxiety (Pew Research Center, 2018). Also, using the Gross National Income (GNI) measures, one can infer that economic inequality is linked to higher levels of religiosity. Most societies with extremely unequal distribution of income tend to be more religious, while those who live in relatively egalitarian societies are less religious (Pew Research Center, 2018).

2.4 Patient's Relationship to God and Humanity (Neighbors)

The People's duty to God aspect of faith describes one's direct and personal bond or relationship with God. According to the Holy Family Catholic Community (2019), this comprises sharing in the sacraments, Eucharistic adoration, devotions such as the Rosary, and the Stations of the Cross; honoring the saints, and nurturing private prayer. Byrd (2019) suggests that the vertical dimension of faith is based on the first four ten commandments: "You shall have no other gods before me; You shall not make for yourself an idol; You shall not make wrongful use of the name of your God; Remember the Sabbath and keep it holy (Exodus 20: 3-11). Mast and Hall (2018) state that the vertical dimension within the context of social relations describes how much control or influence people believe that they can exert on others as well as the status relations created by social class, celebrity, respect, or expertise. While some religious experts see the vertical dimension as mainly a personal or intrapersonal expression of faith, social scientists assert that is it an interpersonal concept, thus, it cannot exist by itself without a reference to others. It is a personal level of social control, which is always relative to others (Mast & Hall, 2018).

On the contrary, the believers' relationship to humanity aspect of faith generally denotes how people demonstrate their faith in Christ by serving and loving others, which consists of special consideration for the poor and suffering (Holy Family Catholic Community, 2019). Byrd (2019) states that this aspect of faith depicts our relationship with others based on the two axes of the Cross. Afzaal (2008) refers to it as the religion of the ego. In the interpersonal aspect of faith, the truth is an element of a specific religion, not an aspect of the person. Byrd (2019) affirms that this aspect of faith is based on the last six of the ten commandments, which reveal how we are to relate to others (our neighbors): Honor your father and mother; You shall not murder; You shall not commit adultery; You shall not steal; You shall not bear false witness against your neighbor, and You shall not covet your neighbor's wife or anything that belongs to your neighbor (Exodus 20: 12-17).

Given that these two dimensions of faith, are viewed from contrasting ends of the spectrum or subjectively interpreted and applied by people of various religious groups, mainly when it comes to health behaviors and practices that may predispose people to CVD, this paper recommends the use of the social-ecological model in facilitating the inclusion of faith in targeted prevention and management of cardiovascular risk in low- and middle-income countries. This model emphasizes various levels of influence (such as intrapersonal, interpersonal, organizational, community, and public policy) and the concept that people's social environment influences their behaviors. Also, our proposed model for the adoption of faith is sustainable in low- and middle-income countries and aligns with the two major aspects of faith while promoting best practices.

2.5 The social-ecological model

The objective of this study was on facilitating the adoption of faith in targeted prevention and management of cardiovascular risk in low- and middle-income countries. Considering the subjective application of faith, possibly due to the lack of a universally acceptable definition of faith or religion, individuals, communities, and religious healthcare institutions need a standardized framework that will facilitate behavior change across the board.

The understanding is that both the prevention and management of risk factors for cardiovascular disease require changes in people's health behavior and the community and the government's health and social policies.

The core concept of the social-ecological model is that several factors or various levels of influence determine one's behavior or lifestyle choices (McKinzie et al, 2013). This model underscores the relations between, and the interdependence of factors within and across all levels of a health problem (Rimer & Glanz, 2005). In other words, people influence and are influenced by their families, social networks, the organizations in which they belong such as their workplaces, schools, religious organizations, their communities, and the society in which they reside (IOM, 2001). Burke, Joseph, Pasick, & Barker (2009) assert that people's health behavior is partly shaped by the social environment in which they live. People's social context or environment is the sociocultural force that influence their daily experiences, which directly or indirectly impact their behavior and health. Therefore, the socio-ecological model emphasizes that interventions must be aimed at multiple levels of influence to achieve and maintain substantial changes in health behavior and outcome (Sallis, Owen, & Fisher, 2008).

According to McLeroy, Bibeau, Steckler, and Glanz (1988), there are five levels of influence, which include: intrapersonal or individual factors, interpersonal personal factors, institutional or organizational factors, community factors, and public policy factors. Figure 1 provides a brief illustration of this model and the five levels of influence, with the "Child" representing the intrapersonal or the individual level of influence.
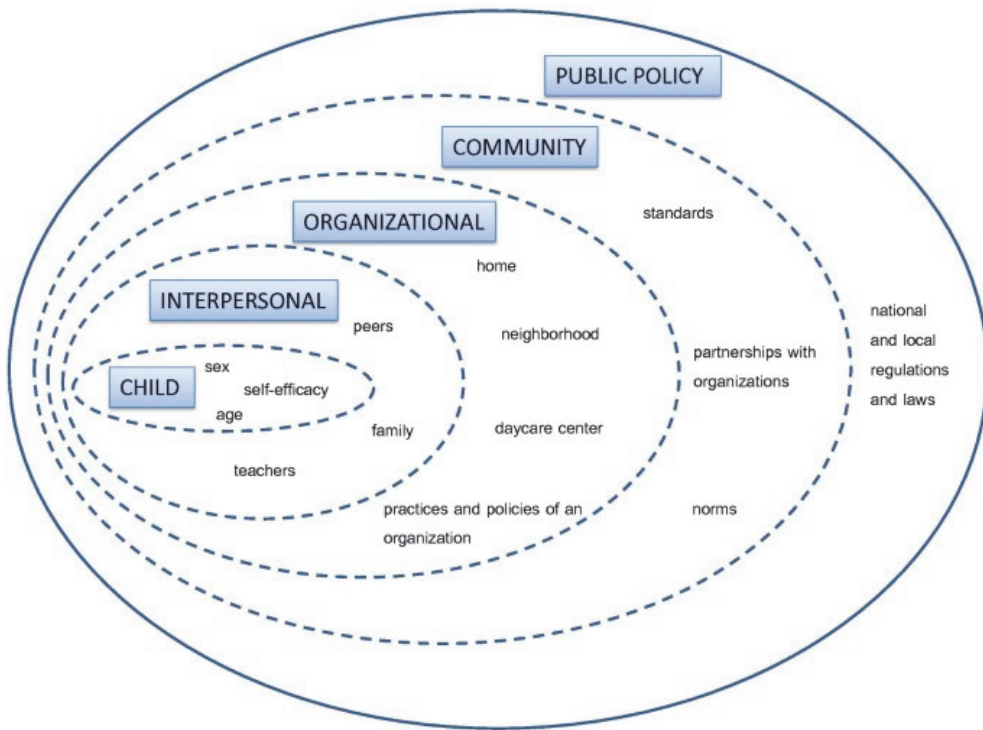
Figure 1: Socio-ecological model
Sources: Sääkslahti, A.K., Inkinen, M.E. & Poskiparta M. E. H. (2014). A socio-ecological approach to physical activity interventions in childcare: a systematic review. *International Journal of Behavioral Nutrition and Physical Activity,* 11, 22 (2014).

Rimer & Glanz (2005) noted that at the intrapersonal level, individual features such as knowledge, attitudes, beliefs or faith, and personality traits affect one's behavior or health choices while factors such as external factors such as family, friends, and peers, which form an individual's social identity, social support network or defines one role can be classified as the interpersonal level of influence. The institutional level of influence or factors includes the rules, regulations, and informal structures that may limit or facilitate prosocial behavior. The Community is the fourth level of influence and it includes social networks and norms, or standards, that exist as formal or informal among people, groups, and organizations. The fifth level of influence is public policy, which can be the local, state, or federal policies and laws that regulate or support healthy actions and practices for disease prevention, early diagnosis, intervention, and management (Rimer & Glanz, 2005).

3. Methods

This theoretical paper used existing literature to examine how we might facilitate the integration of faith in targeted prevention and management of cardiovascular risk in low- and middle-income countries using the social-ecological model. The complexity of this topic informed our research methodology. Also, we acknowledge the fact that a theoretical study on the association between religiosity and cardiovascular disease and health will provide a stronger foundation that will strengthen the existing knowledge on the inclusion of faith in delivering health and social care in low-and middle-income countries. Furthermore, there seem to be overwhelming discussions on the concept of people's duty to God and humanity. Since faith and health are multidimensional concepts, which encompass attitudes, behaviors, beliefs, values, and experiences (Levin, Taylor, & Chatters, 1994), we did not want to duplicate what others have done on this subject. On the other hand, while we recognize the documented positive impacts of the vertical and horizontal dimensions of the Christian faith on population health, there is well-documented evidence of its ineffectiveness as a standalone approach to the prevention of CVD in low and middle-income countries. Therefore, we proposed the use of a socio-ecological model as a more effective approach that may facilitate the integration of faith in targeted prevention and management of cardiovascular risk in low- and middle-income countries.

4. Findings/Discussion

4.1 Why Use the Socio-ecological Model in Faith Integration?

A large body of literature recognizes the relationship between religiosity, social support, self-care, and health (Krause, 2011; Rosland et al. 2008, Casagrande et al., 2013). However, only a few studies have attempted to sufficiently explain the reasons for the alarming rise in the incidence of CVD in low and middle-income countries even though most people living in these countries belong to one religious group or the other. According to Shahrbaki et al (2016), spirituality is one of the dominant subjects among individuals with heart failure as the majority of the patients assert that their religious beliefs, inner faith, the quest for meaning or connection to God as the supreme power are the sources of their inner peace and healing. While CVD patients are learning to use religious beliefs and faith to accept the reality of their illnesses (Shahrbabaki et al., 2016), poverty, ignorance, illiteracy, dysfunctional communities, poor government social policies, and distorted religious teachings and beliefs are promoting the adoption of destructive lifestyles (Wekesah et al., 2019).

People's duty to God and humanity aspects of faith are only effective in mitigating unhealthy lifestyles within the context in which that faith or religion is practiced and to the extent those set of beliefs on which that particular religion, denomination, or church

was established. Several empirical studies indicate that behavioral and medical interventions are more likely to be effective if they are aimed at multiple levels of influence that affect individuals' and populations' behaviors and health status (Glancz & Bishop, 2010). This is because behavior change and medical intervention programs that are based on the socio-ecological model have a greater chance of being successful. Not many people can change their behavior based on a single exposure; instead, numerous exposures are usually needed to change most behaviors (McKenzie, 2013). The socio-ecological model is all about reaching the priority group from different angles or through several channels.

For instance, in their study "Testing a social-ecological model of alcohol use: the California 50-city study" Gruenewald, Remer, & LaScala (2013) concluded that community availability of alcohol and individual drinker characteristics seem to act jointly to influence people's drinking levels and use of drinking contexts. These influences may increase the risks associated with drinking in some settings (e.g., bars) much more than others such as their friends or relatives' homes (Gruenewald, Remer, & LaScala, 2013).

Another study by Nelson, Abbott, and Macdonald (2010) on "Indigenous Australians and physical activity: using a social-ecological model to review the literature" affirmed that the commitment of Indigenous Australians to physical activity and how it has meaning in their lives cannot be separated from the numerous of other influences such as their social networks, prevailing environmental, occupational, nutritional, residential and experiential conditions and, more broadly, colonization, culture, history, and family.

Mao et al. (2014)' study on "Personal and social determinants sustaining smoking practices in Rural China: a qualitative study" also supports the recommendation that the use of a socio-ecological model may facilitate the integration of faith in targeted prevention and management of cardiovascular risk in low- and middle-income countries using the social-ecological model. The study concludes that while people had limited knowledge about the risks of smoking and lack of motivation to quit, social factors were in effect the main obstacles to quitting smoking. The study suggests that the custom of cigarette exchange and cigarette gifting pervaded every part of rural family life, from economic activities to leisure activities, in family and broader social interactions (Mao et al., 2014). The culture of familism and collectivism interplayed with the pro-smoking environment and reinforced rural people's smoking practices at the community level (Mao et al., 2014). Living in a rural area was also a barrier to the cessation of smoking because of the lack of information on smoking cessation and the influence of courtyard-based leisure activities that facilitated smoking (Mao et al., 2014).

Since religion in low and middle-income countries is a central part of community organization and facilitates social cohesion and cultural identity; therefore, it is important for church leaders and faith-based health and social care professionals to adopt comprehensive health and social care practices and messages, which center on

man in his environment. The socio-ecological model promotes best practices and it has been embraced in principle by many health-promotion researchers and leaders.

For instance, the Ottawa Charter for Health Promotion advocates for integrated action at the levels of individuals, communities, and society. It believes that the social-ecological conditions for health promotion are peace, shelter, education, food, income, a stable ecosystem, sustainable resources, social justice, and equity (WHO, 1986). The Ottawa Charter underscores the significance of citizen participation and empowerment. It demands skill in advocacy and intervention. Research outcomes on interventions based on the Ottawa Charter health-promotion strategies include evidence that investment in building healthy public policy is a key strategy, that supportive environments must be created at the individual, social and structural levels, and that personal skills must be combined with other strategies to be effective (Jackson et al, 2006).

Based on the numerous risk factors for CVD, it is evident that the vertical and horizontal integration of faith alone would not be effective in either preventing or managing CVD. The church may promote a healthy lifestyle, but its members require more than knowledge to practice and maintain a healthy lifestyle. Governments in low and middle-income countries need to implement policies that will reduce the intake of saturated fat for example. This may help to address the issue of hypercholesterolemia, which is one of our targeted risk factors for CVD.

Also, the government and society, in general, must address the issues surrounding the structural determinants of the social determinants of health, which have kept most people in low and middle-income countries perpetually poor. The equitable distribution of wealth and other social resources will have a significant impact on reducing people's stress levels.

Since vertical and horizontal integration of faith promotes one's relationship with God and his or her fellow believers or the church, the adoption of the socio-ecological model in our work as faith-based health and social workers will provide us with the skill set that we need to minister to men and women in a world tainted with sin. As humans, we are not only influenced by our biological features or religious beliefs, we are also the products of the culture and socioeconomic environment in which we live.

While we recommend the use of the social-ecological model in facilitating the incorporation of faith in targeted prevention and management of cardiovascular risk in low- and middle-income countries, we are also aware that this approach may be slow to implement as social policies and behavioral changes can be difficult and at times nerve-wracking. However, given that the majority of the low and middle-income countries are signatories to the Ottawa Charter, one may conclude that these policies are already in place.

5. Conclusion

Cardiovascular disease is currently one of the leading health challenges in low- and middle-income countries. Studies from diverse cultures suggest that targeted prevention and management of risk factors, such as hypertension and hypercholesterolemia, might reduce morbidities and mortalities from cardiovascular risks. Most faith-based health promotion facilities support the inclusion of faith in population-level disease prevention programs. However, because of the rigid practices of faith in low- and middle-income countries, this paper examined how the use of the social-ecological model may facilitate the integration of faith in targeted prevention and management of cardiovascular risk. The social-ecological model emphasizes various levels of influence (such as intrapersonal, interpersonal, organizational, community, and public policy) and the concept that people's social environment influences their behaviors.

Numerous empirical research has shown that this model is effective in facilitating the delivery of holistic care as it considers the multifaceted relationship between the individual, the social relationship, the community, and societal factors and it allows us to understand the variety of factors that put people at risk for CVD. This model is sustainable in low- and middle-income countries and aligns with the vertical and horizontal dimensions of the Christian faith while promoting best practices.

References

Afzaal, A. (2008). Religion in two dimensions. Available online: https://ahmedafzaal.com/2008/09/14/religion-in-two-dimensions/ (accessed on 10 June 2022). Alves,

BeLue, R. et al. (2009). An overview of cardiovascular risk factor burden in sub-Saharan African countries: a socio-cultural perspective. *Global Health* 5, 10 (2009). https://doi.org/10.1186/1744-8603-5-10

Burke, N.J., Joseph, G., Pasick, R.J., & Barker, J.C. (2009). Theorizing social context: Rethinking behavioral theory. *Health Education & Behavior*, 36 (Suppl. 1), 555-706.

Byrd, C. (2019). Biblical expressions of the vertical and horizontal dimensions of the Christian faith. Available online: http://disciplerofself.com/discipleship-training/biblical-expressions-of-the-vertical-and-horizontal-dimensions-of-the-christian-faith/ (accessed on 14 June 2021).

Casagrande, S.S. (2013). The prevalence of meeting A1C, blood pressure, and LDL goals among people with diabetes, 1988–2010. *Diabetes Care*. 2013; 36(8): 2271–2279. DOI: 10.2337/dc12-2258.

Curtis, E. et al. (2019). Why cultural safety rather than cultural competency is required to achieve health equity: a literature review and recommended definition. *Int J Equity Health.* 2019; 18: 174.

Gaziano, T.A. et al. (2011). Growing epidemic of coronary heart disease in low- and middle-income countries. *Curr Probl Cardiol.* 2010 February; 35(2): 72–115. doi:10.1016/j.cpcardiol.2009.10.002.

Glanz, K. & Bishop, D. B. (2010). The role of behavioral science theory in the development and implementation of public health interventions. *Annual Review of Public Health,* 31, 399-418.

Gruenewald, P., Remer, L., & LaScala, E. (2013). Testing a Social Ecological Model of Alcohol Use: The California 50-City Study. *Addiction,* 109, 736-745.

Holy Family Catholic Community (2019). The Eucharist: Vertical and horizontal dimensions of faith. Available online: https://holyfamilyparish.org/welcome/father-terry-keehan-weekly-articles/june-2019/the-eucharist-vertical-and-horizontal-dimensions-of-faith/ (accessed on 14 June 2022).

ICN. (2012). The ICN code of ethics for nurses. Available online: https://www.icn.ch/sites/default/files/inlinefiles/2 012_ICN_Codeofethicsfornurses_%20eng.pdf (accessed on 30 May 2022).

Isaac, K. et al. (2017). Incorporating spirituality in primary care. *J Relig Health.* 2016 Jun; 55(3): 1065–1077. doi: 10.1007/s10943-016-0190-2 PMCID: PMC4814294 NIHMSID: NIHMS756611.

Islam, S. et al. (2018). Correlates of healthy life expectancy in low- and lower-middle-income Countries. *BMC Public Health. 2018; 18: 476.*

IOM. (2001). Health and behavior: The interplay of biological, behavioral, and societal Influences. Washington, DC: National Academy Press.

IOM. (2001). Crossing the Quality Chasm: A New Health System for the 21st Century. Institute of Medicine). Washington, D.C: National Academy Press; 2001.

Jackson, S. et al. (2006). Integrated health promotion strategies: a contribution to tacking current and future challenges. *Health Promotion International,* 21(S1), 75–83.

Kirmayer, L.J. (2012). Cultural competence and evidence-based practice in mental health: Epistemic communities and the politics of pluralism. *Social Science and Medicine*. 2012;75(2):249–256.

Koenig, H.G., King, D.E. & Carson, V.B. (2012). Handbook of religion and health. New New York: Oxford University Press.

Krause, N. (2011). Religion and health: Making sense of a disheveled literature. *Journal of Religion and Health*. 2011; 50(1):20–35. DOI: 10.1007/s10943-010-9373-4.

Levin, J. S., Taylor, R. J., & Chatters, L. M. (1994). Race and gender differences in religiosity among among older adults: Findings from four national surveys. *Journal of Gerontology*, 49(3), S137–S145. https://doi.org/10.1093/geronj/49.3.S137

Lopez, AD., et al., editors. (2006). Global Burden of Disease and Risk Factors. New York: Oxford University Press; 2006. Measuring the Global Burden of Disease and Risk Factors, 1990–2001.

Lucchese F.A. & Koenig H.G. (2013). Religion, spirituality and cardiovascular disease: research, clinical implications, and opportunities in Brazil. *Rev Bras Cir Cardiovas,c* 2013;28(1):103-128.

Lucchetti G. & Lucchetti A.L.G. (2014). Spirituality, religion, and health: Over the last 15 years of field research (1999–2013). *The International Journal of Psychiatry in Medicine.* 2014;48(3):199–215.

Lucchetti, G., Lucchetti, A.L.G., Espinha, D.C.M. et al. (2012). Spirituality and health in the curricula of medical schools in Brazil. BMC Med Educ 12, 78 (2012). https://doi.org/10.1186/1472-6920-12-78.

Manitoba's Spiritual Health Care Partners. (2017). The Case for Spiritual Health Care. Available Online: https://www.ihcam.ca/media/Presentations/Making-the-Case-for-Spiritual-HC_FINAL_Nov2017.pdf. (Accessed on 10 January 2023).

Mao, A. et al. (2014). Personal and social determinants sustaining smoking practices in rural China: a qualitative study. *International Journal for Equity in Health* 2014, 13:12 ://www.equityhealthj.com/content/13/1/12.

Mast, M., & Hall, J. A. (2018). The impact of interpersonal accuracy for behavioral outcomes. Current Directions in Psychological Science, 27(5), 309-314. doi:10.1177/0963721418758437.

McKeninzie, J. F. et al. (2013). Planning, implementing, and evaluating health promotion Programs (6th edition). Toronto: Pearson Education.

McLeory, K. R., Bibeau, D., Steckler, A., & Glanz, K. (1998). An ecological perspective on health promotion programs. *Health Education Quarterly*, 15, 351-377.

NHS. (2018). Cardiovascular disease. Available online: https://www.nhs.uk/conditions/cardiovascular-disease/ (accessed on 30 December 2022).

NHS. (2009). Spiritual Care Matters: An Introductory Resource for all NHS Scotland staff. Available online: https://www.nes.scot.nhs.uk/media/23nphas3/spiritualcaremattersfinal.pdf (accessed on 10 December 2022).

Nelson, N., Abbott, R., & Macdonald, D. (2010). Indigenous Australians and physical activity: using a social–ecological model to review the literature, Health Education Research, Volume 25, Issue 3, June 2010, Pages 498–509, https://doi.org/10.1093/her/cyq025.

Norris, P. & Inglehart, R. (2014). Sacred and Secular: Religion and Politics Worldwide (Cambridge Studies in Social Theory, Religion, and Politics) 2nd Edition.

NMC. (2010). Standards for pre-registration nursing education. Available online: https://www.nmc.org.uk/globalassets/sitedocuments/standards/nmc-standards-for-pre-registration-nursing-education.pdf (accessed on 10 January 2023).

Olshansky SJ. (1986). The fourth stage of the epidemiologic transition: The age of delayed degenerative diseases. Milbank Memorial Fund Quarterly 1986;64(3):355–391.

Paul, S. et al. (2001). Religious involvement, spirituality, and medicine: Implications for clinical practice. *Mayo Clin Proc*, December 2001, Vol 76.

Perk, J. et al. (2012). European Guidelines on cardiovascular disease prevention in clinical practice. *European Heart Journal* (2012) 33, 1635–1701 doi:10.1093/eurheartj/ehs092

Pew Research Center. (2018). The age gap in religion around the world. Available online: https://www.pewforum.org/2018/06/13/the-age-gap-in-religion-around-the-world/ (accessed on 14 June 2022).

Reddy K. &Yusuf, S. (1998). Emerging epidemic of cardiovascular disease in developing -601. countries. *Ciruclation*, 1998, 97 (6): 596

Rimer, B.K. & Glanz, K. (2005). Theory at a glance: A guide for health promotion practice (2nd ed.). (NIH Pub. No. 05-3896). Washington, DC: National Cancer Institute.

Rosland, A.M. et al. (2008). When is social support important? The association of family support and professional support with specific diabetes self-management behaviors. *Journal of General Internal Medicine*. 2008; 23(12):1992–1999. DOI:10.1007/s11606-008-0814-7.

Ross, L. (1995). The spiritual dimension: Its importance to patients' health, well-being and quality of Life and its implication for nursing practice. *InternationalJournal ofNursing Studies*, 1995: 32(5): 457-468.

Sallis, J.F., Owen, N., & Fisher, E.B. (2008). Ecological models. In K. Glanz, B.K. Rimer, & K. Viswanath (Eds), Health behavior and health education: Theory, research, and practice (4th edition, pp. 465-485). San Francisco: Jossy-Bass.

Seaward, B. L. (2018). Managing stress: Principles and strategies for health and well-being (9th (ed.). Boulder, Colorado: Jones and Bartlett Learning.

Shahrbabaki, P.M. et al. (2016). Spirituality: A panacea for patients coping with heart failure. *Int J Community Based Nurs Midwifery*. 2017 Jan; 5(1): 38–48.

Solanke, B.L. et al. (2015). Religion as a social determinant of maternal health care service utilization in Nigeria. *African Population Studies* Vol. 29, No. 2, 2015.

Stastna, K. (2019). Do countries lose religion as they gain wealth? Available online: https://www.cbc.ca/news/world/do-countries-lose-religion-as-they-gain-wealth-1.1310451 (accessed on 13 June 2021).

Tsai, G. (2014). Rational persuasion as paternalism. Philosophy and Public Affairs 42 (1):78-112 (2014).

Wekesah, F. et al. (2019). Understanding of and perceptions towards cardiovascular diseases and their risk factors: a qualitative study among residents of urban informal settings in NairobiBMJ Open 2019;9:e026852. doi: 10.1136/bmjopen-2018-026852.

Weathers, E. (2018). Spirituality and Health: A Middle Eastern Perspective. *Religions* 2018, 9, 33; doi:10.3390/rel9020033.

World Bank. (2021). The World Bank in Middle-Income Countries. Taken from: https://www.worldbank.org/en/country/mic/overview.

World Bank. (2019). Classifying countries by income. Available online: https://datatopics.worldbank.org/world-development-indicators/stories/the-classification-of-countries-by-income.html (accessed on 30 December 2022).

World Health Report. (2002). Reducing Risks, Promoting Healthy Life. Geneva: World Health Organization.

WHO. (2003). WHO global strategy on diet, physical activity, and health: European regional consultation meeting report-Copenhagen, Denmark, 2–4 April 2003.

World Health Organisation. (1998). WHOQOL and spirituality, religiousness and personal beliefs: Report on WHO consultation, WHO, Geneva.

WHO (1986). Ottawa Charter for Health Promotion, 1986. Available online: https://www.euro.who.int/__data/assets/pdf_file/0004/129532/Ottawa_Charter.pdf (accessed on 15 June 2021).

World Health Organization (2019). Trends in maternal mortality: 2000 to 2017: estimates by

WHO, UNICEF, UNFPA, World Bank Group, and the United Nations Population Division. Geneva.

WHO. (2007). Prevention of cardiovascular disease: Guidelines for assessment and management of cardiovascular risk. Available online: https://www.who.int/cardiovascular_diseases/guidelines/Full%20text.pdf (accessed on 30 May 2021).

World Health Organization. (2014). Global status report on noncommunicable diseases. Available online: https://apps.who.int/iris/bitstream/handle/10665/148114/9789241564854_eng.pdf?sequence=1 (accessed on June 13, 2021).

Yach, D., Hawkes C, Gould C, & Hoffman, K. (2004). the Global Burden of Chronic diseases: overcoming Impediments to prevention and control. JAMA. 2004n, 291 (21): 2616 –2622.