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Global Issue of Clean Water as it Impacts Occupation

Hillary E. W. Anderson, OTD-S

The purpose of this position paper is to explore the global impact of the lack or limited access to clean water on occupational engagement. The majority of the developed world has access to clean water, however, an alarming number of individuals do not have access to s governs, and impedes occupational engagement of millions globally. In order to enforce occupational justice, afforded from clean water, on a global scale, a fueling passion for change must be experienced by a collaborative force in a focused effort. Ultimately, access to clean water should be a basic human right propagated to all.

Keywords: global, clean water, occupation engagement

The purpose of this reflection paper is to explore the global impact of the lack or limited access to clean water on occupational engagement. When one thinks of access to clean water, one does not typically think of occupations or activities in which we engage as being drastically impacted or of major concern. However, engagement in occupations influences physical health, psychological well-being, and quality of life (QOL) (Law, 2002). Occupations can be categorized in many different ways. Occupations can be delineated by experiences as being engaging or as activities that are constructive, important, participated in with passion, and imbedded in ones being. Occupations can also be classified as being basic or essential activities to satisfy vital necessities; social or activities shared with others; relaxing or calming activities; regular or activities routinely completed; irregular or favorable, activities completed at ones discretion; or time-killing, activities completed to take up time (Jonsson, 2014). Based on these categories, for most, the consumption or filling of clean water is a briefly experienced basic occupation that does not require much thought or effort. More specifically, in the affluent regions of the world, clean water is an amenity that can be accessed with ease, but for those living in impoverished areas it is a coveted resource (Hunter, MacDonald, & Carter, 2010). For many, the acquisition and treatment of water is a basic occupation that takes precedence over numerous important activities and routines. When one is unable to quench one of the most basic human needs such as clean water, occupations such as rest, sleep, education, play, leisure, social participation, and presumably even work, are neglected (Blakeney & Marshall, 2009). In result, the limited or

lack of access to clean water monopolizes, governs, and impedes occupational engagement of millions globally.

Methodology

In order to gain a comprehensive overview of the global issue of clean water as it effects occupation, a thematic analysis was conducted on the literature. The analysis of the literature included the review of multiple peer-reviewed scholarly articles, several textbooks, and on-line newspaper articles via scholarly and electronic databases inclusive of CINAHL Complete - EBSCOhost, Pubmed (MEDLINE), and Google Scholar. The keywords searched were clean water, global access, water treatment, point of use, filtration and impact on occupational engagement. The following themes were identified and reviewed: global access to clean water, health detriments of untreated or contaminated water, water treatment at point of collection and use, and the impact on occupation.

Literature Review

Global access to clean water

Improved drinking sources deliver water that is safe to consume and are inclusive of the following: “piped household water connection, public standpipe, borehole, protected dug well, protected spring, rainwater collection” (Centers for Disease Control and Prevention [CDC], 2012, Improved drinking water sources, para. 1). The majority of the developed world has access to clean water, however, “over 780 million people are still without access to improved sources of drinking water” (WHO & Unicef, 2012, p. 2). These populations consist of individuals living in underdeveloped countries, rural

communities, and therefore lower socioeconomic regions across the world. China, India, Nigeria, Ethiopia, Indonesia, Democratic Republic of the Congo, Bangladesh, United Republic of Tanzania, Sudan, and Kenya “are home to two thirds of the global population without an improved drinking water source”, with the sub-Saharan Africa region having the least access to clean water (WHO & Unicef, 2012, p. 9). These regions without clean water access still rely on unimproved water sources like unshielded excavated wells, unshielded natural water sources transported by water carriers or trucks, as well as surface water sources “collected directly from rivers, lakes, ponds, irrigation channels and other surface sources” (WHO & Unicef, 2012, p. 6). Even with clean water sources available, many individuals have to go through great lengths to provide their families with clean water. For example, “how far you have to walk to fetch a pot of drinking water depends on where you live- Asia or Africa. To get drinking water, the walking distances vary from 2 to 6 km. It is a daily chore for villages in India and Africa” (Vidyasagar, 2007, p.57). Moreover, in underdeveloped and more rural regions of the world, carrying methods are far more physically demanding and time consuming. In Burkina Faso, which is located in West Africa, “women carry loads of 20 kg on their head and walk 1 to 2.5 h daily 300 days a year” (Vidyasagar, 2007, p.57).

Health Detriments of Untreated or Contaminated Water

Separate from the physical toll of procuring clean water, the health effects of untreated water range from numerous illnesses to morbidities and fatalities. Globally, “millions of people are infected with neglected tropical diseases (NTDs), many of which are water and/or hygiene-related, such as Guinea Worm Disease, Buruli Ulcer, Trachoma, and Schistosomiasis” (CDC, 2013a, Disease & death, para. 3). A predominant concern for developing countries is diarrhea attributed diseases. Sadly, “1.6 million people die every year from diarrhoeal diseases (including cholera) attributable to lack of access to safe drinking water and basic sanitation and 90% of these are children under 5” (WHO, n.d., Drinking water, sanitation, health and disease, para. 2).

Even developed countries are subject to water related illness from contaminated water. Unfortunately, “millions of people are exposed to dangerous levels of biological contaminants and chemical pollutants in their drinking-water due to inadequate management of

urban, industrial or agricultural wastewater” (WHO, 2013, p. 6). Even with the vigilant water treatment practices in the United States (U.S.), waterborne disease outbreaks have occurred. In fact, the biggest outbreak in the U.S. to date was in the early 1990s in Milwaukee, Wisconsin when just under a half a million individuals came down with diarrhea due to parasites found in their residential public water source (CDC, 2013b).

However, not all contaminants causing illness in developed regions are because of improper water management. Additionally, “dangerously high concentrations of chemical hazards, such as arsenic and fluoride, originating from natural sources affect millions and cause conditions such as cancer and fluorosis” (WHO, 2013, p. 6). As discussed, untreated and/or contaminated water has serious physiological effects. However, established health detriments caused from unsafe water sources are not necessarily exhaustive, as “it is difficult to determine what causes diseases like cancer, it is impossible to know how many illnesses are the result of water pollution, or contaminants’ role in the health problems of specific individuals” (Duhigg, 2009, para. 12). Water treatment, safe water and sewage disposal, and adequate cleaning practices have the capacity to preclude nearly 10% of morbidity worldwide and over 6% of all fatalities (CDC, 2013a). As occupation engagement and health are interdependent for survival, disruption in physical health can have direct occupational consequences (Wilcock, 2006).

Water Treatment at Point of Collection and Use

Individuals all over the world procure safe water by very different means. Some gain access to improved water sources directly from a safe source. Others rely on household water treatment methods, determined based on their environmental affordances, such as the “chlorination method, flocculant/disinfectant powder, solar disinfection, ceramic filtration, and slow sand filtration” (CDC, 2014a, Water Treatment Options, para. 1). The chlorination method entails the stirring of chlorine in solution or capsule form, into water, and letting it sit for a half an hour, maintenance in the form of adequate water storage is required (Sobsey, Stauber, Casanova, Brown, & Elliott, 2008). To use flocculant-disinfectant powder to treat water, the powder in the packet added to the water, rids it of microbes, bacteria, and toxins, once mixed and allowed to process for ten minutes, the liquid poured into a clean container, filters through a piece of cloth. The Solar disinfection method entails the filling

of clear sealable containers and then exposing them to direct sunlight for 6 or more hours, which renders bacteria harmless (Berney, Weilenmann, Simonetti, & Egli, 2006; Boyle et al., 2008). Ceramic filtration involves the use of ceramic filters which are empty porous containers placed in larger vessels with a water valve. Water poured into the suspended ceramic filter, slowly strains into the larger vessel to be accessed via the water valve at the bottom of the vessel (Clasen, Brown, Collin, Suntu, & Cairncross, 2004). Slow sand filtration requires the pouring of water into a plastic container with a long spout attached to the bottom filled with sand, rocks, and/or gravel, until it reaches just above the sand. A biofilm is created on the surface of the sand comprised of microorganisms. In order to attain filtered drinking water, one would pour more water into the container over a diluting filter pushing the clean water out of the long spout, which empties the water at a height above the sand layer (CDC, 2014b). The aforementioned treatment methods can serve as effective forms of water filtration depending on the personal aptitudes, cultural beliefs, physical environment, temporal constraints, and economic affordances of regions in need of clean drinking water. Additionally, these treatment methods have the capacity to take up a large portion of time; therefore, encroaching on time that could otherwise be spent engaging in basic and meaningful occupations.

Discussion

Clean Water Access and Occupation

The acquisition of clean water, or the treatment practices to create safe water, have the capacity to limit, overtake, and prohibit important occupations. Separate from occupational experience, occupations are also categorized into different areas of participation. Such areas of occupations are “activities of daily living (ADLs), independent activities of daily living (IADLs), which are basic occupations that can be performed by someone else, rest, sleep, education, work, play, and social participation” (American Occupational Therapy Association [AOTA], 2014, p. S6). Activities of daily living are occupations completed to fulfill basic needs, like drinking water, independent activities of daily living are basic occupations that can be performed by someone else, such as water acquisition or water treatment. The interaction between occupations and their contexts is multifactorial and reciprocal. Contexts of occupations range from personal, historic, geographic, physical, temporal, social, cultural, virtual, political, and economic (Hamil-

ton, 2010; Stadnyk, et al., 2010; Townsend & Wilcock, 2004) environments, all of which greatly impact who, what, where, when, why, and how individuals engage in occupations.

The identified negative effects experienced by many individuals globally, seeking a clean water source, are occupational disruption, imbalance, deprivation, marginalization, and alienation as well as social isolation, displacement, change in occupational meaning, and identity confusion or crisis. Blakeney and Marshall (2009), interviewed Letcher County, Kentucky residents who did not have access to clean water due to runoff from coal mines and found “that almost every daily occupation as identified in the areas of occupation, previously named, were affected by polluted water in the physical environment (watershed), as well as inside the home from well water or the municipal water supply” (p. 51). Individuals and populations experiencing water-related or waterborne illness, whom have to travel long taxing distances to obtain clean water, and/or whom have to engage in home water treatment practices can experience a variety of occupational consequences.

The most concerning occupational consequence such populations face is occupational deprivation, which is the long-term impedance of individually significant or vitally important occupations due to reasons outside of ones’ power (Whiteford, 2010). Tragic psychological/emotional, sociocultural, and physiological effects may be experienced as consequence of limited or lack of clean water access. Psychologically speaking, concern for one’s survival or one’s family’s survival at any age would be emotionally taxing. According to M. K. Anderson, a missionary from the U.S., in Burkina Faso, because of their limited access to water and basic necessities, parents often have to select which child to invest and support physiologically, to ensure their survival, thus, instead of losing all of their children they may lose a lesser amount (personal communication, November 9, 2014). The grief of losing a child can be crippling, but having to make such an impossible decision could have lasting effects of guilt, reclusiveness, depression, self-punishment, and withdrawal from participating in occupations once found meaningful. Such unimaginable conditions can lead to occupational alienation from feelings of helplessness, seclusion, exasperation, disaffection to oneself and communities when occupational participation is experienced to be lacking value (Stadnyk et al., 2010).

As a result of water-related or waterborne illness from contamination, occupational disruption, or the short-term interruption of individually significant or vital important occupations (Stadnyk et al., 2010), may occur. For instance, children may be unable to attend school because of illnesses from contaminated or untreated water. As more developing countries receive access to clean water or water treatment education and materials, more individuals are obligated to engage in new occupations such as household water treatment methods. According to Blakeney and Marshall (2009), the water contamination of Letcher County, Kentucky forced residents to add new occupations to do with water purification to their routines and to experience occupational disruption, imbalance, and injustice because of the lack of access to clean water.

Roles and routines that would be typically experienced by children based on their chronological age may look very different in regions without or with limited access to clean drinking water sources. The physiological/emotional effects on children in such conditions range from awareness of their mortality, stress, increased responsibility, accelerated maturation, to emotional turmoil. More mature responsibilities and less engaging occupations may fall on the shoulders of children and adolescences in order to care for family members, provide for their family, and foster the survival of their family. Occupational imbalance results when areas of occupations are not evenly experienced (Stadnyk et al., 2010), as the case when concerned with filling basic needs such as acquiring clean water. Moreover, occupations considered to be leisure, play, and/or engaging are put on hold to prioritize time for water acquisition, water treatment practices, care for familial waterborne illnesses, as well as other basic occupations. Limitation in such occupations may lead to poor health, negative impact on one's QOL (Zuzanek, 2010), and restriction of play exploration, which is vital for child development.

Additionally, occupational marginalization, which is the restriction of a person's or party's occupational choices (Stadnyk et al., 2010), may occur when water procurement or treatment responsibilities are not shared equally across gender. For instance, in developing countries, females are "more likely to be responsible for collecting water for their family, making it difficult for them to attend school during school hours" (CDC, 2013a, Access to WASH, para. 5). This distinctly delineated occupational responsibility assigned to females, is

a provisional chore that does not discriminate against developmental age, perpetuated by many cultures.

Social isolation from limited social engagement is of occupational concern for populations without access to clean water or do not collectively participate in safe water storage practices. Children and their families may limit their social engagement with others due to fear of catching waterborne diseases or illnesses. Such limited interaction could be very developmentally damaging for children as they may lack the social skills, experience little scaffolding, crave companionship, and lack social support needed for optimal survival and well-being. Untreated or contaminated water leading to disease outbreaks, as well as the depletion of financial resources to treat such illnesses, may lead to displacement or the reluctant relocation from one's natural dwelling (Hamilton, 2010). Displacement from one's place of residence may lead to identity confusion or crisis (Whiteford, 2010) when contextual confines cause a change in occupational meaning.

A Call for Action

The aforementioned occupational outcomes, namely occupational disruption, imbalance, deprivation, marginalization, alienation, as well as social isolation, displacement, change in occupational meaning, and identity confusion or crisis, resulting from the lack or limited access to clean water, are evidence of a great occupational injustice. In order to enforce occupational justice, that is, the occupational freedom and affordances to engage in meaningful occupations, to such populations, a fueling passion of change must be experienced by a collaborative force. This call for action requires the raising of awareness and advocacy by supporting pieces of legislation, direct aid, partnering with local, national, and worldwide nonprofit and humanitarian aid organizations.

Creative awareness methods dispensed through social media have been very fruitful in financial endowment, as seen by the water bucket challenge for amyotrophic lateral sclerosis (ALS) research. A similar effort has been recently employed for clean water with the dumping of dirty water on oneself in order to raise awareness of how many people still do not have access to clean water. Such awareness opportunities utilizing social media have the capacity to inform and ignite billions globally.

Through research and advocacy, an awareness of the occupational practices of these vulnerable popu-

lations must continue to be explored. Specifically, professionals such as occupational scientists, occupational therapists, and those in social science disciplines have the opportunity to join in this advocacy effort, by disseminating information on human occupational needs, populations experiencing occupational deprivation, and the long-term effects of such depravity, namely poor “spiritual, mental, physical, or economic well-being” with policy makers (Whiteford, 2010, p. 323). Additionally, direct aid may be implemented by individual efforts or missionary avenues through religious and humanitarian organizations. Nonprofit and humanitarian aid organizations such as CARE, Unicef, and WaterAid provide sustainable clean water by raising money to drill and dig wells, provide hand and solar pumps, educate millions on safe water treatment and storage, supply means for water filtration, dispense oral rehydration salts and deworming tablets, distribute water carrying containers, and advocate for vulnerable populations by supporting pieces of legislation. One such legislative action is the Water for the World Act, which expands on existing legislation to ensure access to clean water, adequate hygiene practices, and sanitation in a cost effective way with maximum impact (Winder, 2013). Awareness and advocacy of such movements not only utilizes tax money more efficiently and productively, but can save and greatly improve the lives of many globally.

Conclusion

Populations without access or with limited access to clean water are dispersed globally and comprised of individuals living in underdeveloped countries, rural communities, and therefore lower socioeconomic regions across the world. The purpose of this position paper was to explore the global impact of the lack or limited access to clean water on occupational engagement. A review of the literature led to the understanding of the global occupational impact or outcomes. The occupational outcomes due to contextual constraints discussed, may cause occupational disruption, imbalance, deprivation, marginalization, and alienation. Additionally, social isolation and change in meaning of occupations, identity confusion or crisis, experienced from displacement, may result. A byproduct of continued improvement in clean water access is the participation in new occupations, in the form of water treatment practices. Such detrimental occupational outcomes caused by the lack or limited access to clean water are evidence of a great occupational injustice. In order to

enforce occupational justice, afforded from clean water, on a global scale, a fueling passion of change must be experienced by a collaborative force in a focused effort. Avenues to make a global change can be enacted by raising awareness and advocating by supporting pieces of legislation, direct aid, partnering with local, national, and worldwide nonprofit and humanitarian aid organizations. Occupational health is of universal concern as it fuels ones developmental, “spiritual, mental, physical, or economic well-being” (Whiteford, 2010, p. 323). Therefore, clean water should not be an amenity for the privileged but a mandated affordance for all.

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