

WATER SCARCITY AND SOCIAL WELLBEING OF PEOPLE LIVING IN DISTRICT KARAK KHYBER PAKHTUNKHWA, PAKISTAN

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Abstract

Water is one of the basic requirements for a human civilization to flourish and survive. It is crucial for human survival, but it is also a key factor in increased agricultural and industrial output. The current study examined how water shortage affected people's social well-being in District Karak, Khyber Pakhtunkhwa, Pakistan. A quantitative survey technique was used to collect data from 399 respondents for the study. The Risk Society Theory was used to investigate water scarcity and its impact on people's social well-being. A closed-ended interviewing schedule encompassing diverse components concerning water sources, reasons for water shortage, the impact of water scarcity on social well-being, and adopted government policies to assure water availability in District Karak was employed for the current research. The current study used convenient sampling technique. The data was examined using descriptive and inferential statistical methods. The results show a substantial link between dependent and independent variables. The findings suggest that people are frustrated and face dangerous situations as a result of their lack of access to the basic requirement of clean water. According to the report, most individuals are forced to travel in search of water, and there are problems among joint families and neighbors over the unjust allocation of water. Furthermore, They are obliged to buy water, which has an impact on their financial situation. Women and children are disproportionately responsible for bringing water over long distances, which has a negative impact on their health. People's lives have been disturbed and their livelihoods have been compromised as a result of water shortage. According to the study, if the problem is not handled quickly, it may increase with time, generating greater challenges for the residents of this region. As a result, everyone must take this issue more seriously in order to improve public health, biodiversity, ecosystems, and future generations.

Introduction

According to United Nations World Water Development Report, right to use fresh potable water and sanitation is a primary individuals right. It illustrates that provision of access to potable water is a universal sustainable development goal. Surprisingly, 780 million people lack access to clean drinking water, and 2.5 million lack basic sanitation. Every year, over 3.5 million people are killed as a result of this problem, with roughly half of them being children under the age of five. (UNWWDR, 2022).

Worldwide, seven hundred eighty five million people need availability of clean water and one million people pass away every year because of hygiene water related diseases. Absences of clean water adversely impact the physical health of women and children having no option but to cover long distances in order to bring water (UNICEF, 2022).

Water scarcity not only affects the economy of a country or community but has a deep impact on the social well-being of people. Problems related to the social well-being due to water scarcity could be unemployment; poverty, mental stress, depression and anxieties. In addition, water scarcity could cause conflicts over water distribution, disturbance in activities, diseases, migrations, and social conflicts (Shehzad 2019).

The well-being of people is majorly influenced by the insufficiency of clean water. The insufficiency of water for sanitation, personal hygiene, and clean water results in poor hygiene and health issues. According to the annual report on water borne diseases, Among the 2.8 million persons affected by diarrheal illnesses, it is projected that children under the age of five are the most impacted. (Rijsberman, 2006).

Water is life; we depend on water for foodstuff, wellbeing, occupation, entertaining and leisure. However lack of water could also take away life. In addition, the unavailability of water can be even danger. Presently, seven hundred million people reside in water strained regions. Up to two thousand twenty five, this figure is estimated to reach to 1.8 billion that is approximately twenty five percent of the globe populace. Moreover, wellbeing, foodstuff, gender equal opportunities, financial market, and surprisingly education are negatively exaggerated by water insufficiency. Furthermore, shortage of water trembles the whole social structure of community because it causes food, health, and financial crisis. Similarly, it induces people into disputes on insufficient resources, and compels them to migrate away from their home areas (Nauges, 2014).

Worldwide seven hundred eighty five million people require provision to safe potable water. Each day, above eight hundred children pass away from unclean water because of diarrhea due to impure water, sanitation and hygiene. The affects of water shortages badly influence households and their societies. Because, lacking fresh, easily reachable water they can become victims of poverty for decades. Bringing water by children from far flung areas can become the cause for children drop out of school and compels parents to make hard efforts for their survival. Women along with children are badly exaggerated as they are much susceptible to diseases from polluted water; Women frequently tolerate the troubles of bringing water for their households (Odaro, 2012).

Water scarcity affects the day-to-day life pattern. Because water is mandatory for domestic use like cooking, eating, washing, and sanitation system. A safe and sufficient amount of water is necessary for a sustainable environment. There is a direct relationship between water, natural environment, and human well-being. When water scarcity comes in society it affects people's daily life patterns because when people do not get water they confront with stressful situations.

People have to arrange water at whatever cost and they have to miss many works in arranging water. In a water scarcity situation, people forgot all other things and try to find water. Without water, a household or society cannot run. In addition, water scarcity creates competition among people over water resources because absence of water leads to competition and disputes over water resources. Many families and groups break down due to competition and disputes over water resources. When people go to get filtered water from water filtration plants they face a huge crowd and many social issues over there. People face issues like misbehaving with each other because everyone wants to get first and no one leaves their place because they all need water for drinking and domestic responsibilities (Hoekstra, 2013).

Asia has international importance more than ever before and has a very growing economy, but facing emerging water shortages which results in Geopolitical depression, affects economies and creates competition over the resources. Due to demographic and urban expansion, it becomes very difficult to provide fresh water for the usage of people. Water demand is increasing time by time in the form of agricultural, industrial and modernized lifestyle. Internationally water crisis is defined as, when the supply of water is fewer than 1700 cubic meters per capita per year. Only Asia is not suffering from water scarcity but the whole world is stressed by the issue. Because in the total quantity of water less than one percent of the water is drinkable, 97.5 percent is ocean salt water and 1.6 percent is in polar ice caps, and glaciers (Chellaney, 2018).

In developing nations, the majority of communities dumped 80-90 percent of their wastewater into rivers and streams., which are then used for drinking, bathing, and washing. Poor people of developing countries are facing one of the most dangerous world's water pollutants increasing microbes that are a source of typhoid, cholera, diarrheal illness and further deadly disorders. Worldwide, unclean water kills over two million children under the age of five. (WHO, 2019). According to estimation, competition over water resources will increase in the next coming few decades throughout the globe. Water scarcity is currently affecting North America and the Middle East the most. Sub-Saharan African countries Rwanda and Kenya will confront increased water shortages as their populations increases double or triple over the next 50 years. (Tibbetts, 2015). The average rainfall in India is 1170mm which time is 5 to 6 months in a year. There are 4000 billion m³ per annum of drinkable water in the country of which 1047 billion m³ of water is lost due to various reasons of which one is evaporation. The total water use of India is 1123 billion m³ of which 728 billion m³ is used for surface water and 395 m³ is used for groundwater. In addition, in 2006 India consumed 829 billion m³ of water and it is estimated that by the year 2025 it will consume 1093 billion m³ of water. And in the future, it is estimated they will face 5 to 10% water scarcity (Troyet et al. 2005).

A study by the Pakistan Council of research on the Water Resources of Pakistan noted that the rapid depletion of groundwater resources increases the water scarcity in big cities of Pakistan and it is expected that Pakistan could confront serious water scarcity problems. According to the Pakistan Council of Research on Water Resources if this situation remains the same a large number of populations mostly that live in big cities will face water scarcity. Pakistan is an agricultural country and the majority of people are involved in cultivation. Furthermore, a large proportion of the economy of Pakistan depends on agriculture and a large amount of water is used for agriculture which is one of the sources of the water crisis. About ninety percent of the water that is available in the world is used for agriculture. Pakistan uses a large amount of water for agriculture and has the 4th largest rate of water use in the world and can store the water only for

30 days. According to estimation agricultural water demand could increase in Pakistan by up to nineteen percent by 2050 (Crosgrove and Rijsberman, 2017).

Since 2000, developing countries such as Pakistan have encountered water scarcity of 1,700 cubic meters per capita per year (UN 2019). According to a Washington-based magazine, the International Monetary Fund (IMF) ranks Pakistan third among countries confronting extreme water shortage. Furthermore; Pakistan's per capita supply of fresh water has decreased below the 1,000-meter water scarcity criterion, which was 3,950 cubic meters in 1961 and 1600 in 1991 (Nabi, Ali & Khan, 2019).

Water is the present and future of any nation. The unavailability of fresh water and the absence of sources of drinkable water are a threat to the survival of living beings, and a restriction on the well-being of people. It is an alarming situation that water which is the basic right of all living beings is becoming insufficient. Since 2000, developing nations such as Pakistan have experienced water scarcity of 1700 cubic meters per capita per year (UN, 2019). Water scarcity has affected almost all of Pakistan's provinces, particularly Khyber Pakhtunkhwa (KP). There is enough water in several areas of Khyber Pakhtunkhwa, such as those in the Malakand division (Rasool, 2019). However, other regions, like as Karak, are experiencing severe water scarcity. People in District Karak are frustrated and living in risky situations because they lack the most basic necessary for survival (Rasool, 2019). It is believed that parents ask their children to carry water from far locations. Similarly, due to water shortages, people are obliged to purchase water. Similarly, problems over water sharing have arisen among joint families (Rasool, 2019). As a result, this research is being conducted to determine the consequences of water shortage on the well-being of people living in Karak, Kyber Pakhtunkhwa, Pakistan.

Literature Review

Water scarcity is the decline in the availability, quality and quantity of water supply. The low level of water can be a consequence of inadequate resources, climatic changes, poor infrastructure and hydrological factors. Based on several reports, water scarcity is not a relative concept; rather it is an absolute idea. Numerous symptoms of water scarcity are food insecurity, conflicts and competition between water users. Water scarcity is defined as a condition where people face stress due to multiple reasons. It includes the low level of water supply, inadequate water resources or climate changes. In this research, the term water scarcity demonstrates a situation of lack of water availability levels as compared to water needs (Brennan 2018).

According to Health-Related Quality of Life (HRQL), the sensation of health, joy, and prosperity is characterized as well-being. It requires strong mental health, a high level of happiness in life, a feeling of purpose, and the ability to manage with stress (Ruggeri et al. 2020).

Here in this study, social well-being is divided into physical, social, and mental well-being. Physical well-being refers to the normal functioning of the body. Whereas mental well-being refers to an individual's capacity to deal with everyday life obstacles, work successfully and productively, and contribute to his or her community. And social well-being is being able to engage in society, feeling respected as a member, and feeling linked to a larger social context. Furthermore, physical, mental, and social well-being include a variety of components such as enough food, housing, clothes, and healthcare. Furthermore, feeling well and living in a healthy physical environment with clean air and water are important. Social coherence, mutual regard, and the ability to assist others are all indicators of strong social relationships., are also essential. Furthermore, appropriate and stable livelihoods, as well as consistent access to natural and other

resources, contribute to overall well-being. (Ruggeri et al.2020).

Water scarce areas may face problems related to the social well-being like physical, mental, social, and economic. In addition, agriculture has remained a major source of handling the already breaker economy. Particularly, it plays a crucial part in terms of food security, prosperity, and employment of the people. Moreover, water scarcity does not only affect the economy of people but also has a deep impact on the social well-being of the people. Problems related to the social well-being of people may be unemployment, poverty, mental stress, depression, anxiety, and disturbance in activities, diseases, migration, and social conflicts (Shehzad 2019).

WH Auden, a twentieth-century British poet, famously stated that millions of individuals have lived without love but not one without water. In the context of South Asia, these words are relevant. More over a fifth of the world's population lives in South Asia. South Asian countries, particularly India and Pakistan both have unfortunately faced challenges in proper water management and conservation. As a result, there has been a serious water crisis, with severe consequences for both ground and surface water. Furthermore, not have of access to water has a significant impact on people's well-being. Inadequate water for sanitation, personal hygiene, and drinking causes poor hygiene and health problems. According to the yearly illness report, among the 2.8 million afflicted persons, children under the age of five are primarily impacted by diarrheal infections. The supply of fresh water is an array of challenges to resource management, health, and poverty globally. Water scarcity has affected the health of people mainly children with many diseases, and malnutrition as a consequence of food insecurity. Absence of fresh water, poor hygiene and sanitation conditions sometimes leads to serious health issues. (Walker, G. 2009).

Altering rainfall models has openly and ultimately determined water scarceness to a new stage. Water insufficiency is one of the specific worries for small businesses, which are the foundation of family financial circle. It has been observed that water scarcity had mostly affected four significant supports (family, forest, crop farming, and livestock) of small businesses. Forests are one of the crucial livelihoods support as they provide biomass (wood, fuel woods and fodders). Forests also provide nutrients, and extra non-timber foodstuffs (herbs, fruits, nuts, etc.). Jungles control micro-climates (moisture, temperature, etc.), and water cycles, also assist to avoid soil erosion, landslide, and flash floods (Schuetze et al. 2013).

In addition, crop cultivation is crucial to family circle livelihoods as it supplies foodstuff, employment, food to animals and infrequent revenue from the trade of surplus goods. Livestock nurturing also assists the family circle in many means. The trading of livestock goods, like milk products, flesh, eggs, provides extra profits for the family. Furthermore, livestock is considered a kind of security as crop failure happens they are simply tradable in the bazaar. The straight or indirect shocks of growing water scarcity are obvious in all of the four supports of smallholder livelihood business. Water scarcity has negatively impacted the livelihoods of the people of the mountainous and plains areas. The major losses they informed comprise direct financial losses in expressions of reduction in profits from crop cultivation and livestock nurturing. Moreover, people lost time and health due to accumulating and saving water. Water scarcity consumed capital of people to make safe water provisions (Schuetze et al. 2013).

The psychological position of people is observed under the circumstances of water scarcity. Water scarcity builds a long-lasting effect on people's lives. They experience emotional deficiencies, and social insecurity while living under the circumstances of water scarcity. Water scarcity causes several difficulties for people, with major examples reported in China, UAE, and

other Gulf states. People endure a lot of pressure and nervousness due to all problems they face while fulfilling the requirements of water. They suffer stress and anxiety in water-scarcity situations (Shove Elizabeth 2012).

One of the common hurdles that people faced is the extra responsibility of satisfying water requirements. Furthermore, they also face mental pressures and extra burdens while gratifying other household responsibilities such as taking care of children and other family members . It affects the mobility, autonomy, and decision-making of people living in the water-scarcity situation. Psychological effects cannot be neglected while studying the daily experiences of people. One major reason is, people sometimes have to fulfill water needs while covering long distances. Water availability is important in maintaining a healthy relationship between family members and society (Shove Elizabeth, 2012).

In practically every significant community, water is required not just for drinking but also for long-term agriculture, energy generation, trade, and transportation. Despite the fact that agriculture is fully dependent on freshwater resources, trade and product transportation continue to rely on shipping by sea. On the other hand economic development and the growing human population have increased the requirements for water double, putting the burden on this finite source and the environment. The world's agriculture relies on water and needs nearly seventy percent of the globe drinking water. However, because to restricted admittance to water sources, the agricultural sector is plagued by several issues. The agriculture industry is being pressured to produce more crops with less water as the population grows. According to the most current World Development Report, rural regions are home to more than 75 percent of the world's poor, who confront a variety of obstacles. There are rivers in some rural areas, but little irrigation infrastructure. Some rural settlements rely on rain and groundwater, but there are no tube wells or solar-powered pumps, and no dams to store water and power agricultural systems. (Verhoeven and Marijn, 2007).

Every society has different class system depend on the people's economic status. There are usually three classes in society in which one has the higher amount of economic resources and the second is the middle class which has fewer economic resources and is only able to satisfy their basic needs. The third class is the bottom class, which has few or no economic resources and cannot meet basic requirements such as water, food, and shelter. Besides that, every person distributes their earnings for different purposes. They made a budget for their different needs and then use their earnings according to the plans that they made. People use their earnings for different household requirements such as child care, leisure activities, education, health, and water requirements. But when any social issue comes into society it affects the whole society and the income of the people. In addition, almost 348 million people in the world have faced economic water scarcity and due to this, they failed to achieve their fundamental objective. In such situation they buy mineral water but those people who lack enough money find it difficult to buy mineral water. Such people use the water from resources that are not able to drink. But due to economic compulsions, they use this unsafe water and when people use such water they face water-related diseases and sometimes death (Walker, 2009).

Water scarcity is a global issue and a producer of many problems. Usually, poor people rottenly face water scarcity and unavailability of clean water. This then give rise to water-related diseases that in return bounds people to spend money on health. Water scarcity is not only the issue of the middle and lower class but it is also the issue of the upper class as well because every individual

in the society needs clean water. Consequently, the people of all classes spent a large amount of money on water necessities. Absence of access to water affects income and the social well-being of people. It forces people to pay high fees for water, wait in lengthy lines at public sources, and endure additional expenditures for storing and heating water (Nandy et al. 2009).

Water scarcity gives rise to many diseases in which two global diseases are diarrhea and hepatitis A. It is estimated that 3.2% of deaths are due to diarrhea all over the world. While hepatitis A is an infection that is faced by 212 million people all over the world and almost 100,000 deaths are due to hepatitis A. Such situations affect people's social and economic life and have to live in traumatic situations. Sometimes people have to borrow money in such circumstances and they spend their whole life returning this money. Keeping apart that, many industries run on water and use water in making different products. When industries tackle water shortage; sometimes, they have to shut down their industries because of reduction in production. Closure of industries then leads to unemployment issues and economic crisis. In addition, water is used for the cultivation of vegetables, fruits, rice, wheat, etc. Water insufficiencies bring the shortage of things, and increases in the price of things compel people to pay double prices (Ali et al. 2015).

People use water filtration plants to filter water. Sometimes water contains many impurities which are not good for health and unable to drink. So people have to filter unclean water for drinking. Filtering water consumes electricity and people have to pay extra bill which is an economic loss. Furthermore, groundwater is in danger, as its level is dropping quickly. Many popular countries are facing groundwater depletion in the world such as Pakistan, China, India, and the countries of the Middle East. Groundwater is used for irrigation, domestic work, and industrial purposes in large quantities in the form of tube wells and pumps. The cost of pumps and tube wells is so high and every household cannot meet the expense of such technologies for extracting water (Seckler et al. 2010).

Farmers lost the value of their land, when they tackle water deficiency their land became like deserts and incapable of cultivation. When their land destroys, it affects their class status and food production. Such destruction of the land adversely influences the economy of the household and country. Incapability of lands for cultivation brings a shortage and increase in the prices of food. According to estimation, the poor Asian people who are below the poverty line spend their sixty percent of total income on affording cereals (Stapp and William 2016).

Many researchers are of the view that the 21st-century conflicts could be on water. To explain this statement researcher gave the argument that water is compulsory for humans to survive. It is the need of every human to get quality sources of water to live alive, if people lack availability of drinkable water people face death, which would directly lead to war on water sources. In the earliest time people were allowed to migrate in search of water and food anywhere, but now the development of nations, cities, and Governments had made it difficult to search for food and water. Additionally in some regions, industrial development, the building of dams on waterways, water use for irrigation purposes, the distillation of water from the aquifer, pollution of the water sources and climate change has made water so scarce. People without access to water will have to choose between conflict and death from dehydration. United States National Intelligence Estimate on water predicts that after two thousand twenty-two the upstream countries will control water resources, and a water crisis will occur in downstream countries which will lead them to uncertainty and disappointment. As a result of this countries will infract with the United States on main policy and objectives (Dunn, 2013).

People are migrating in search of food and water due to the expanding population and lack of access to water resources. People are compelled to live in a crowded situation with unsafe water and food. A large number of people face diseases as a result of unprotected food and water. In rural Africa after every 15 second a child loses their life due to water-related diseases; these diseases may be HIV/AIDS, Malaria, or Cholera. In rural Africa particularly HIV-infected people without the availability of drinkable water always lose life rapidly. Polluted water contains bacteria that make weak immune system of a person, which allows HIV to attack a person very quickly. Malaria is one of the most fatal diseases in the world; round about 500 million people suffers malaria each year. Malaria is a preventable disease because it is related to mosquito habitats in standing water. Cholera occurs when people are compelled to live in an overloaded situation with unsafe drinking water. The United Nation High Commission for Refugees (UNHCR) reports that of 43.3 million refugees many of them live in camps where they are openly under threats of water-related diseases (Hughes, 2018).

Water is an essential need for human health, agriculture, and livelihoods. The exhaustion of water is predicted to bring conflict, instability, and migration. During the dry season, people are forced to migrate as the rivers dry. Due to the increasing unavailability of river water, groundwater is currently being reduced to irrigate crops. Water scarcity is associated with many predicaments including internal displacement of people and rivalry between people for the sake of sufficient water. As water is the basic and biological need for survival, it is linked to the production of food. Unavailability of water for daily use, food production, and drinking can cause migration of people majorly in dry seasons. Furthermore, it is difficult to generalize the idea that water alone may play a significant role in human relocation. But few pieces of research have demonstrated the fact that many water-based conditions work as a push factor for people to leave their residences. Water is an environmental factor and problem that can force people to migrate (Nauges et al, 2014).

The reduced access to fresh water has widespread consequences on the economy including decreased production of food, loss of livelihood options, and increased economic tension. The economy of Pakistan is largely based on agriculture; Pakistan is becoming a water-scarce country. Because of the increasing population, there has been a depletion of freshwater resources. Adverse climate variations like drought and erratic monsoon patterns give rise to water reduction. Pakistan was once a water-abundant country but now is facing the issue of water scarcity. Several reasons have contributed to the reduction of water resources such as climatic change, excessive consumption of water, and lack of water storage. Consequently, this situation resulted in increased economic tension and inadequate means of subsistence (Iqbal 2010).

Agriculture is the backbone of the economy of Pakistan. Water shortage has many adverse effects on agriculture that have a winding effect on the growing level of poverty leading to economic and social problems. Pakistan may not be a water-scarce country by hydrological definitions but water associated problems such as poor water quality, and inadequate access to clean water adversely affected the larger proportions of the population (Seigmann and Shehzad 2006).

Water scarcity affects the majority of Pakistan's population in both rural and urban locations. According to an estimate, it is assumed that Pakistan will face a serious water issue in the coming years. In previous years, water resources in Pakistan had reduced due to a lack of rainfall and water shortage. The livelihood of most rural people in Pakistan is dependent directly or indirectly on agriculture. Agriculture productivity depends predominantly on the availability of irrigation, importantly the public provision of canal water. In the rural areas agriculture is considered the

bread and butter of the economy including the household economy which has directly or indirectly affected an entire population of rural areas (Seigmann and Shehzad, 2006).

The fundamental aspects of health are water and sanitation. Despite a reduction in the child death rate, infectious diseases still pose the largest life threat to the health of young children and infants. In Pakistan, more than 39,000 children under the age of five die from diarrhea each year. Out of which, 88 percent is featured to unsafe water supply, inadequate sanitation, hygiene, and sewerage. To maintain a healthy body and mind proper intake of safe water, personal cleanliness, and adequate sewage disposal are needed. Due to the unsafe supply of water and improper sewage system, the children mortality rate is increasing everyday in Pakistan (Ahmad and Masood, 2017). A water shortage and its potential physical, emotional, and social well-being repercussions are being studied all around the world. The majority of existing water scarcity research, however, concentrates on the global north. The issue is commonly disregarded in academic circles in the global south, particularly in South Asia, where water shortage is the most severe (Barlow, 2017). Water scarcity is a serious calamity in Pakistan, which is one of the countries' s most afflicted by natural disasters. However, the issue is frequently ignored in academic circles. The current study attempts to fill a vacuum in the literature by measuring the state of water scarcity and its physical, mental, and social well-being implications.

Theoretical Framework

Ulrich Beck's (1992) risk society theory is an organized strategy to coping with risks and uncertainties brought by and led by modernity itself. According to this theory, society is transitioning from traditional to modern lifestyles. (Beck, 1992). He contended that whenever society progresses, technical advancement occurs. These technological developments carry with it risks such as climate change and a scarcity of resources. He contended that contemporary civilization creates environmental hazards as well as changes in cultural patterns. Traditions, values, norms, mores, and folkways have all changed as a result of modernity. Environmental threats cause a scarcity of resources such as food and water (Beck, 1992). Pakistani society is also modernizing, tackling challenges such as resource sustainability. These dangers produce problems such as social conflict, effects on livelihood, consequences on education, and effects on family economic position (Iqbal, 2010). The theory will assist us in contextualizing our findings within the larger academic discussions within sociology.

METHODOLOGY

The current study collected data using a quantitative survey method. Typically, quantitative procedures are used to quantify an issue by generating numerical information or data that may subsequently be turned into useful statistics. This is used to assess attitudes, beliefs, actions, and other well-defined qualities and to generalize the results to a broad population. Montgomery (Montgomery, 2000).

The study was conducted in District Karak, which is part of the Kohat Division in the province of Khyber Pakhtunkhwa, Pakistan. Karak became a district in 1982, having previously been a part of District Kohat. Banda Daud Shah, Takht-e-Nasrati, and Karak are the three Tehsils in Karak. The total population of District Karak is seven lac six thousand two hundred and twenty-nine (706,299), according to the 2017 census. Furthermore, the current study's unit of analysis consisted of solely males aged 18 to 65. Females were left out due to cultural norms that forbid women from interacting with strangers in the area. The sampling technique was convenient sampling, which allows the researchers to acquire data from conveniently available interviewees

(Vaessen, 2002). Another reason we chose this technique was that people in this region are wary of outsiders, so we obtained data from those who readily consented to share it.

In addition, the Taro Yamane formula was used to calculate sample size. The formula is $n = \frac{N}{1 + N(e)^2}$. Where n is the sample size, N represents the whole population, and e represents the 0.05 confidence interval. According to the 2017 census, the population of District Karak is 706,299 people. Using these factors in the equation, we get 399 respondents with a 95% confidence interval. In the end, 399 people were questioned.

For data collecting, the survey approach was used. Because all the population was not educated, the researchers devised a closed ended interviewing schedule. Descriptive and inferential statistical approaches were utilized to analyse the data in this study. The percentages and frequencies were evaluated using a descriptive statistical approach. The inferential statistical approach was usually used for the chi-square test with the help of the Statistical Package for Social Sciences (SPSS), which is widely regarded as one of the best software packages for social sciences. Montgomery (Montgomery, 2000).

Results

According to the statistics in table one, 78.2% of respondents believed that water shortage had an impact on their well-being, while 4.5% disagreed. Furthermore, 48.9% of respondents claimed they ask children to bring water in water-stressed circumstances which adversely affect their education and health. On the other hand, 12% of the respondents stated that they do not ask, while 39.1% sometimes ask children to fetch water. Furthermore, 83.5% of the respondents mentioned that buying water negatively affects their financial position, while 2.8% disagreed, and 13.7% stated that water scarcity sometimes adversely impacts their financial position. Moreover, 54.4% of the respondents believed that water scarcity has a significant negative influence on their joint family relationships concerning water management. This is because family members tend to blame each other when facing water shortages, with male members often blaming the females for wasting water on household chores. In contrast, 22.6% disagreed, and 23.1% said that water scarcity sometimes influences their family relationships.

Likewise, 48.4% of the respondents stated that water scarcity forces people to migrate in search of water, while 6% disagreed, and 45.6% said that water scarcity sometimes compels people to migrate due to water scarcity.

Table 1: Percentage Responses of Respondents

Statement	Yes	No	Sometimes
Water scarcity and social wellbeing	78.2%	4.5%	17.3%
Fetching water by children and their education	48.9%	12.0%	39.1%
Buying water and financial position	83.5%	2.8%	13.7%
Water scarcity and joint family relationship	54.4%	22.6%	23.1%
Water scarcity and migration	48.4%	6.0%	45.6%
Water scarcity and activities	50.7%	15.4%	33.9%
Water scarcity and livelihood	72.7%	4.5%	22.8%
Water scarcity and water-borne diseases	92.7%	2.0%	5.3%
Water scarcity and agriculture production	95.7%	1.0%	3.3%
Water scarcity and conflicts	71.7%	3.0%	25.3%

Moreover, 50.7% of the respondents reported that water scarcity adversely impacts their indoor and outdoor activities, leading to disturbances in household chores and causing delays in going to the office or conducting livelihood activities. In contrast, 15.4% disagreed, and 33.9% said that water scarcity sometimes affects their activities. Similarly, 72.7% of the respondents believed that water-scarce situations badly affect their livelihoods, as they have to spend most of their time fulfilling their water needs, which creates disturbances and economic crises. However, 92.7% of the respondents stated that they did not find clean water during water-scarce situations, leading to waterborne diseases such as cholera, typhoid, and diarrhea. Only 2% disagreed, and 5.3% mentioned that they sometimes face waterborne diseases.

Additionally, 95.7% of the respondents said that they have experienced a reduction in agricultural production due to water scarcity, while only 1% disagreed and 3.3% answered that water crisis sometimes reduced their agricultural production. Moreover, 71.7% of the respondents believed that water scarcity causes conflicts in their areas over water distribution, while 3% disagreed, and 25.3% replied that water scarcity sometimes causes conflicts over water distribution in their areas.

Hypothesis Testing

Hypothesis 1:

(H0): There is no significant association between water scarcity and the mental health of people.

(H1): There is a significant association between water scarcity and the mental health of people.

Phi Test:

The Phi Test correlation coefficient (ϕ) is used to measure the strength of association between two categorical variables.

Descriptors of Phi Test

Values	Strength of association
-1.0 to -0.7	Strong negative association.
-0.7 to -0.3	Weak negative association
-0.3 to +0.3	Little or no association.
+0.3 to +0.7	Weak positive association.
+0.7 to +1.0	Strong positive association

Source: An introduction to statistical learning (James et al. 2013).

Phi coefficient test of water scarcity and mental health.

Phi coefficient		Value	Approx. Sig.
Nominal	Phi	0.336	0.000
N of Valid Cases		399	

The table above presents the strength of association between water scarcity and mental health, using the Phi coefficient. The Phi value of 0.336 indicates a weak positive association between the two variables. Furthermore, the results suggest that an increase in water scarcity is associated with a rise in mental health issues among people. Because in water scarcity condition people have to arrange water for their survival at whatever cost. When they face difficulties in accessing water for daily needs, such as having to cover long distances or facing higher costs, may lead to

increased tensions, depressions, and anxieties.

Based on the Phi coefficient's value (0.336) and the significance level (0.000), the null hypothesis (H0) is rejected, and the alternative hypothesis (H1) is supported. Therefore, we can conclude that there is a weak positive relationship between water scarcity and mental health.

Hypothesis 2:

(H0): Water scarcity is less likely to cause conflicts in the joint family relationship over water management.

(H1): Water scarcity is more likely to cause conflicts in the joint family relationship over water management.

Cross tabulation of water scarcity and conflicts in joint family relationship

		Do you think water scarcity affects the joint family relationship over water management?			Total
		yes	no	sometimes	
Have you ever faced water scarcity	Yes	217	46	0	263
	No	0	41	0	41
	Sometimes	0	3	92	95
Total		217	90	92	399

The table above presents the cross-tabulation of water scarcity and conflicts in the joint family relationship over water management. Out of 263 respondents who faced water scarcity, 217 indicated that it caused conflicts in the joint family relationship. Common issues included blame between family members when facing water shortages, especially when male members felt that female members wasted water on household chores. On the other hand, 90 respondents stated that water scarcity had no effect on the joint family relationship, while 92 respondents mentioned that it sometimes impacted the relationship.

Based on the cross-tabulation, the majority of respondents indicated that water scarcity caused conflicts in the joint family relationship over water management, supporting the alternative hypothesis (H1) that water scarcity is more likely to cause conflicts in joint families.

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	534.469 ^a	4	.000
Likelihood Ratio	531.863	4	.000
Number of Valid Cases	399		
0 cells (0.0%) have an expected count of less than 5. The minimum expected count is .01			

The findings of the chi-square test assessing the association between water shortage and disputes in joint family relationships are shown in the table above. The chi-square value with 4 degrees of freedom is 534.469a, and the p-value is less than 0.05. This suggests a strong relationship between

water shortage and tensions in the joint family relationship over water management.

In conclusion, the cross-tabulation and the findings of the chi-square test support the alternative hypothesis. (H1) that water scarcity is more likely to cause conflicts in the joint family relationship over water management.

Discussion

The study findings address the influence of water shortage on people's social well-being. Numerous respondents stated that they had migrated to various places owing to water shortage. This presents a number of problems for families, including renting or acquiring a new house in a new region, starting a new company or job, and choosing a new school for their children. People were unhappy with the migration since it compelled them to leave their hometown, their job/business, and move to a foreign country. According to the study, a water crisis drives people to transfer from one region to another in order to survive; hence, they migrate to places where they can survive (Dunn, 2013). As a consequence, the current study is completely supported by the literature, which shows that people migrate from one location to another due to water scarcity. The majority of residents in the region are suffering from the social and economic implications of water scarcity, according to a recent poll. They either buy water or travel long distances to acquire it. As a result of the water scarcity, they are experiencing family and neighborhood disagreements. When there is a lack of water, people typically blame each other. Water is quite expensive for individuals who live in joint families. Male members of the home accuse female members of wasting water on several domestic duties. Similarly, when water becomes a source of dispute in the neighborhood. These issues can sometimes become the fundamental cause of significant tribal battles. The literature also reveals that when there is a scarcity of water, the amount of water available is always less than the amount of water demanded. This raises issues with water allocation both inside the household and with neighbors. People in rural regions have access to a variety of water sources, including well water and tube well water. People encounter water-allocation conflicts within their families and with their neighbors when there is a scarcity of water (Tibbetts, 2015). The research also fully supports the findings that a lack of water increases conflict between families and tribes. According to the present study, respondents requested that their children bring water to school, which interferes with their education and has a detrimental influence on their health because they had to transport water from far-flung regions, wasting their time and harming their health. According to the literature, children in water-stressed areas are taught how to obtain water for the family. Because their dwellings do not have any other supply of water, such as money to buy water or municipal committee water. As a result, their children are unable to attend school. (Baqai, 2005). The study's findings also suggest that people in the areas suffer from depression and anxiety, which is totally backed by the literature, which demonstrates that people in water-stressed areas regularly suffer from depression and have interruptions in their livelihood. Due to water shortage, people purchase water to suit their household and agricultural needs.

Daily water purchases are a considerable financial burden for medium and lower-income families, and economic concerns are frequently the root of domestic and inter-family conflict. It interferes with the family's basic domestic requirements, including food, health, and education. Due of water shortage, impoverished people must travel long distances to obtain water. Because getting water is extremely expensive for the poor. They have little choice except to transport water from distant regions on their heads or with animals (Odaro, 2012). One issue that residents of water-

stressed places experience is a lack of indoor and outdoor activities. They disturb indoor chores such as housework since they spend the majority of their time meeting water demands. Working late or earning a living elsewhere adds to stress and economic instability (Vinnari & Frederickson, 2010). The study's findings are consistent with the basic concept of Risk society theory (Beck, 1992), which claims that as societies get more modern and mechanized, they become more risky. Climate change, floods, and water scarcity will be exacerbated by increasing technology breakthroughs. Our research also reveals that the changing environmental dynamics of the district Karak are important causes of water shortage. There is a rising tendency of deforestation and the barring of arable land for housing and industrial reasons, which is ultimately causing in a rise in temperature and a decrease in the subsurface water table. As a result, the area is suffering from water scarcity, which is producing further socioeconomic issues such as communal disagreements, the collapse of the family institution, and unfair treatment of children and women when carrying water from great distances. This work contributes significantly to the application of risk society theory to the issue of water scarcity, and future research may use it as a baseline.

Conclusion

According to the study the whole region is suffering from water scarcity and its impact on the social well-being of people. The research study shows that people are not satisfied with the quality of water. The people do have not a specific source of water, such as municipal committee water. The people of the region are compelled to get water via tanker, or by traveling long distances to get water in cans and bottles. They ask youngsters to carry water, which has a negative influence on their academic performance. There is no specific water filtration system in the whole region. That is why people of the region are facing water-borne diseases. Water scarcity creates conflicts for people in the whole region. Due to water scarcity people are facing conflicts in joint family relationships, weak relations with neighbors, bringing of water by women and its effect on women's health and education, disturbance in indoor and outdoor activities due to water scarcity. The study's findings revealed that people are dissatisfied with the role of the government and non-governmental organizations (NGOs) in water conservation and availability. Lastly, the results and overall procedure of research conclude that the determinants discussed have an impact on the social well-being of people and society holistically. Results showed with time these determinants are adding more to the problems faced by the people of the region. Their coping methodologies will not be enough for the coming decades, and they must shift from their current habitat to survive for the coming generations. Throughout the previous decade, Ismail Serageldin has been a significant voice in drawing attention to the water situation. In August 1995, he predicted that "if this century's wars were fought over oil, the next century's wars will be fought over water." Unless we modify how we manage this rare and critical resource." Finally, the present study's findings indicate that the issue will eventually reach a tipping point and become a source of further problems for the region's population. Because of the water situation, residents in the region are experiencing sadness, stress, and worry. Though this is now a micro-level issue, it has the potential to become a macro-level issue in the future, affecting the majority of Karak.

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