

Multiple Water Source Use in Rural Area: Are Households Having the Safest Option for Drinking?

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ABSTRACT

The research was undertaken by the researcher to explore the multiple sources of water in the rural areas to meet their everyday household needs. It will also evaluate whether the household having the safest option for drinking or not. The study findings will help identify the upto what extent the drinking water source are safe when it comes to the health perspective. It will also explain the issues and their remedies related with the source of water in the rural sectors. Additionally, it will help in ascertain the direct and indirect impact of the multiple sources of the water on rural people and their household routine.

Keywords: drinking water source, multiple sources of water, rural areas, purified drinking water

INTRODUCTION

Most of the rural sectors have to face insufficiency regarding the availability of purified drinking water. Due to the backward regions and under developing sector of the world they go through lots of issues that directly or indirectly limited their access of safe drinking water. Few of the factors such as low income, community interference, lack of management, technical solutions, as well as water contamination from industries, chemicals, industrial waste, water disposal and agriculture chemicals. Major study will identify the all possible and multiple sources of water that can be specifically used by the rural people to meet their basic everyday needs. Current evidences reflects that most of the rural

villages are not equipped with systematic public water systems. Alternatively, they are dependents on water sources such as wells, groundwaters, rainwater and other. It is observed that these types of water system mostly wells are contaminated due to chemicals and bacteria and majorly they are untested so it is difficult to determine the quality of water. However, research will indicate the safest source of water in rural sector and other related issues (Álvarez et.al. 2017).

Multiple water sources used in rural areas

Water is an essential requirement and a requisite natural resource for the survival of the human being. From years it is observed that rural water supplies have commonly been neglected or overshadowed by the urban community. Though adequate water supply is the most essential necessity for the rural people to meet their basic requirements including their day-to-day household activity, hygiene purposes, domestic uses as well as for drinking purposes. An adequate supply of safe drinking water is one of the major requirements for a healthy life and also helps in community developments. There are various water sources that are used by rural population. But there are lots of problem issues are associated with these multiple water sources that directly or indirectly the health of the rural people and also adversely impacting their community development. Quality and quantity of water

are the biggest hurdles and obstacles faced by most of the rural sectors. It has been identified that there are lack of technologies and adaptation of effective mechanisms in the rural areas. Improper water management system is also considered as a factor that effects the quality of drinking water. Another factor that impacts the water quality and quantity is the natural calamities and disasters (Chitsaz and Azarnivand, 2017).

However, there are lots of water sources that are available in most of the rural areas that can be helpful in meeting the needs of the rural people. Many researches have been conducted to identify the safest drinking water option that is available in the rural areas as well as deep studies have been organized and regulated to observe the specific issues related to these sources and another research focuses on evaluating the solutions and measure to ensures and maintain the quality of the drinking water. Among the multiple water sources use in rural areas, groundwater, surface water and rain water are considered as the primary source of water (Fuster and Donoso, 2018). Many rural sectors adopt rainwater harvesting method to fulfill their household needs as there is no other alternative source of water. On contrary groundwater is considered as the main source of water which is used by the rural population and the sectors where there is no availability of above-mentioned sources surface water is used to meet their requirement. But through many studies it is observed that all the primary source has lots of contamination issues that need to be treated by implementing effective techniques. Other than that secondary source of water presented in the rural sectors are well, water tanks, storage tanks, standpipe, tap water, boreholes and tanker water. As mentioned earlier lots of problems and issues are attached with all the sources of water such as cost effectiveness, water management, water quality, water storage, water distribution, low income, inadequate quantity, lack of knowledge and many other

issues that directly or indirectly impacting the lives of rural people as well as impact their health too (Naiga et.al. 2015).

Additionally, there is specific method or system is adopted by the rural people to store the water that can be consumed on daily basis. For example, rainwater harvesting it is technique that most of the rural population implement at household level that mainly done by storing the rain water by installing roof or ground catchments. Another water source which is stored by the rural is the groundwater. It is considered as the most practicable and easy method to store the water that can be used lately for the household needs. Basically, the process includes extraction of groundwater either from open wells, eternal spring, tube wells or artesian wells (Gross and Elshiewy, 2019).

Well construction is the well-known storage method that is used in the major parts of rural sectors as it is considered as the most feasible and easiest way to store the water for a longer period of time. It is determined that rural sectors prevail drinking water mainly from the underground aquifers. Different types of wells that are built in the rural areas to store the water includes dug wells, bore wells, drilled wells, jetted wells, driven wells, cistern well and spring water system. But it is also important to take care of few safety precautions while constructing these well in order to ensures the quality of the stored water. Few factors that need to be carefully considered while constructing the well are depth of the well, location of the well there should not be any drainage near by the well as it can contaminate the water, groundwater aquifer should be developed etc. In addition to this, there are many other things that need to properly taken care of is sanitary design and construction, pump selection and disinfections of water supplies (Jones, 2015)

Dug and Drilled wells is considered as the most familiar water source system adopted by rural people to meet their individual household requirements. This

type of well is little shallow but most of time the water gets contaminated because of the surface water. Water from this type of well is only useful if it is properly constructed and maintained timely to keep it safe from the biologic and chemical impurities. Pump selection also plays an important role to supply the water to the houses in the rural areas. Different aspects that should be scrutinize carefully while the selection and installation process such as system design pressure, availability of power and electricity, cost effectiveness and application are well depth. Additionally, with the above-mentioned water sources spring is also an important source of water for the rural areas and it one of the oldest solutions that helps in fulfilling the individual need. Generally, it is natural source of water that reaches the ground surface from the hills. It is mainly found in mountain areas. In most of the rural region it is found in adequate amount but it is also observed that such type of water source is provides water seasonally. Other than that, cisterns are also a type of water source in rural sector. Basically, it is a closed sealed underground water reservoir which is filled with rainwater, but one cannot be rely on such type of source for the long period of time. There are lots of devices such as chain pumps, bucket system, sanitary rope, hand pumps and bucket pumps etc that are used in the process of water extracting and water supply in the rural sectors (Kedia, 2015).

Facts associated with quality of drinking water

The crucial aspect that needs to be evaluate is the efficiency and quality of the water available in the rural areas. It is very important to ascertain that is the household having the safest option for drinking in the rural sectors. As per WHO 80% of diseases in the world is directly or indirectly is related to water. Water being the basic necessity and the natural resource important for the survival of the human beings as well as to fulfil their basic household requirement such as drinking water,

washing, cooking, bathing, cleaning and livestock washing. Safe water is also very important for the development of the rural community. Many studies reveal that due inadequate amount of safe drinking water every year rural area experience lots of risks that includes mortality, mobility, severe diseases, economic loss and other (Koehler et. al. 2018).

A large number of researches has revealed that multiple water sources in the rural sector doesn't match the criteria when it comes to the quality of the water. There are multiple issues that are attached to the water used in household. Due to the poor quality of water people in rural areas go through many difficulties that impact their everyday life. It is noticed people in rural sector collect water from tanks, wells, unprotected ponds, streams, rivers, groundwater and other sources for their use. But most of the time water from above mentioned sources has lots impurities that affects the health of the rural. Water gets affected from the rapid development and growth in the rural sectors. Few issues that affect the quality of the water are pollution, industrial waste, over exploitation, chemicals, sewage discharge, agriculture waste, bacterial contamination, soil filtered water, backflow and other problems that impacts the quality dissolved iron, turbidity, hardness, bacterial contamination, colour, odour and taste (Martínez, 2017).

Additionally, there are lots of bacterial contamination present in the water of rural areas which is the main cause of illness, disease, and sometimes death too. Another reason of that hinders the quality of drinking water is contamination due to over exploitation of groundwater extraction. In addition to this, industrial and agriculture waste also badly impact the quality of the water. It is seen in many rural areas that water quality is affected due to fertilizers and pesticides that is used in the industries and agriculture products and related process. Due to excessive use of harsh chemicals has degraded the water sources of the rural areas (Chau et. al. 2015).

Moreover, other factors such as behavioural practices also impact the quality of the drinking water in the rural areas. Lack of knowledge and improper sanitation practices also impact the quality of the drinking water and its sources. Due to improper disposal of the waste products and wastages leads to the contamination of the water. It has been identified that improper drainage system such as open drain near the water source also impacts the quality of water because all the ammonia and coliform bacterial get mix into the source of the water. In addition to this, sometimes due to lack of support from the government in terms of financial support, rural development policies also impact the development of efficient water source (Whaley and Cleaver, 2017).

Additionally, sometimes inefficient service providers indirectly impact the quality of drinking water, for example due to poor plumbing installation and design there are chances of purified water gets mixed with contaminated and results into impurified water. As it is very well known that rural areas are mainly the backward areas that are less equipped with facilities and knowledge can also experiences and has to face few issues such as less technical support, financial crises, poverty, improper guidance etc that directly or indirectly impacts the quality of drinking water. Therefore, it is clearly visible that household in rural sectors are not having the safest option for drinking water. But by adopting appropriate precautions, measures and remedies to filter or flush out the impurities, water from the multiple sources can be used for drinking and is considered to be safe (Beshiru et. al. 2018).

Remedies and Recommendations

Safe drinking water is the basic need for an individual to survive a healthy life on the earth. Study has revealed that people in rural areas are still facing the problem of safe drinking water. Various methods and approaches are recommended to deal with issues related to the drinking water. And

many measures have been adopted and implemented to tackle the problem efficiently. Firstly, it is recommended to adopt a systematic water supply process that needs to match with the set of quality standards. Emphasis has been given on implementing effective methods and measures that ensure to provide safe drinking water that can be helpful for the rural people as well as will be effective in reducing the health issues and problem that they experience because of the consumption of the impure and unsafe water. Additionally, regular inspection and maintenance of the current water source is recommended that will help in identify the root cause of the problem regarding the water quality and can be removed on regular intervals (Twisa and Buchroithner, 2019).

Furthermore, it is recommended to inspect the water sources its exposed parts regularly so that if any damage such as cracks, well casings, surface damage, broken parts and other issues that are found in the current system can be replaced or removed immediately as it will also helps in saving the water by getting contaminated. As earlier mentioned well is the common source of water in the rural sector so it is recommended to install a sanitary seal and well cap so that no one use the well unauthorizably. It is also recommended to clean and sanitize the well with bleach and hypochlorite granules as per the instructions it will help in disinfecting the well and impurities. In addition to this, it is also suggested to construct the well on an appropriate land which is free from pollution and there should be no drainage located near to the well. It is also advised that use of chemicals such as fertilizers, fuels, pesticides, herbicides, pollutants and degreasers must be prohibited near the well (Cook et. al. 2016).

Additionally, another important recommendation to ensure the quality of water is regarding the disposal of waste and hazardous components such as agriculture waste, industrial waste and chemicals. It is advised to adopt and implement an efficient

waste management system so that the harsh chemicals and waste can be disposed properly without getting mixed into the water source of the rural areas. This will also help in maintaining the quality of drinking water for a longer time. Lastly, it is advised to filter the impurities of the water by using various methods such as ozonation, chlorination, ultraviolet radiation, iodination and heat. Though each of the above stated methods need to be implement under the supervision of an expert else it can be dangerous and can impact the quality and health of the people. So, by adopting the above recommended measure and remedies rural people can have safe drinking water from the multiple sources of water available in the region (Kumari and Kulshrestha, 2015).

CONCLUSION

Therefore, the study have highlighted the multiple sources of water in the rural sector and how it impacts the living of the rural people. Mostly, it is observed that there are various sources of water in the rural sectors but the water quality has to faced lots of issues. Several remedies and measures have been suggested in the research that can be helpful for the rural sector to have ample of safe drinking water. However, there is a lot of scope for researching as well as a lot of adaptability towards changes. Furthermore, the study also investigated the problems and issues that are faced by the rural sector that impacts the drinking water quality. According to the research all the potential issues and remedies should be considered and implemented to ensure the safety and will be helpful in extracting quality of the drinking water from the sources. The study revealed that the multiple water source use in rural area is safe for drinking and other household activities.

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