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REINTERPRETATION OF THE HADITH ON RECYCLED WATER WITH A SCIENTIFIC APPROACH

Tubagus Muhammad Syukron
Syarif Hidayatullah State Islamic University, South Tangerang, Indonesia
tbmsyukron@gmail.com

Ahmad Fudhaili
Syarif Hidayatullah State Islamic University, South Tangerang, Indonesia
ahmad.fudhaili@uinjkt.ac.id

Abstract

The hadith concerning the well of Budhā'ah, known for its contaminated condition, raises intriguing questions regarding Prophet Muhammad's use of its water for ablution. The contradiction between the well's description and the prophet's action has prompted scholarly interpretations about a possible natural purification process. However, existing explanations regarding this purification do not fully align with the well's condition as described in the hadith. This study reinterprets the Budhā'ah well hadith to determine the legal status of recycled water using modern scientific findings. Collaborating with PT Rofis Jaya Perkasa, a wastewater treatment company, this research aims to scientifically reconstruct the well's historical condition. Employing a qualitative approach with a case study on the Budhā'ah well hadith, this research gathers data through literature review, interviews, and field observations. Hadith analysis involves scrutiny of its chain of sanad, matan, and contextual understanding using scientific theories. The analysis reveals that the well's water was a mixture of rainwater and periodically entering household wastewater. Natural mechanisms, including microbial activity, were capable of transforming the contaminated water into cleaner water. These findings offer a new perspective on the concept of

water purity in Islam, particularly concerning recycled water and its relevance to modern water treatment practices.

Keywords: hadits, recycled water, Budhā'a's Well, and science

Abstrak

Hadis tentang Sumur Budhā'ah, yang dikenal karena kondisinya yang tercemar, menimbulkan pertanyaan menarik terkait penggunaan airnya oleh Nabi Muhammad untuk berwudu. Kontradiksi antara deskripsi sumur dan tindakan Nabi memunculkan interpretasi ulama tentang kemungkinan adanya proses semacam daur ulang. Kendati demikian, penjelasan mengenai proses penyucian air ini tidak sesuai dengan kondisi Sumur Budhā'ah sebagaimana yang termaktub dalam hadis. Penelitian ini akan menginterpretasi ulang hadis Sumur Budhā'ah dalam menentukan status hukum air daur ulang menggunakan pendekatan temuan sains modern. Melalui kolaborasi dengan PT Rofis Jaya Perkasa, sebuah perusahaan yang bergerak di bidang pengolahan air limbah, penelitian ini berusaha merekonstruksi secara ilmiah kondisi Sumur Budhā'ah pada masa lalu. Penelitian ini menggunakan pendekatan kualitatif dengan studi kasus pada hadis Sumur Budhā'ah. Metode pengumpulan data meliputi studi pustaka, wawancara, dan observasi lapangan. Hadis akan ditinjau menggunakan kritik sanad, kritik matan, dan pemahaman hadis kontekstual dengan pendekatan teori sains. Hasil analisis menunjukkan bahwa air di Sumur Budhā'ah merupakan campuran air hujan dan limbah rumah tangga yang masuk berkala. Mekanisme alami, termasuk aktivitas mikroorganisme, mampu mengubah kualitas air yang tercemar menjadi air yang lebih bersih. Temuan ini membuka perspektif baru dalam memahami konsep kesucian air dalam Islam, khususnya terkait dengan air hasil daur ulang.

Kata kunci: hadis, air daur ulang, Sumur Budhā'ah, dan sains

Introduction

The changing times have given rise to new phenomena that demand a more contextual and relevant understanding of hadith. This has encouraged the emergence of new approaches in hadith studies, one of which is the rational-scientific (science) tendency that colors some contemporary hadith studies (Faizin, 2015). The urgency of using this approach is based on the need to overcome the problematization of hadith interpretation. Previous scholars' studies tended to focus on linguistic aspects, with less emphasis on the substantive meaning of hadith (Baharuddin, 2014).

The need for a scientific approach is also relevant in understanding hadith related to recycled water. This approach is expected to produce a comprehensive interpretation of hadith. This paper will analyze the hadith narrated by Abū Dāud, al-Turmūdzi, and al-Nasā'i as follows:

حَدَّثَنَا مُحَمَّدُ بْنُ الْعَلَاءِ وَالْحَسَنُ بْنُ عَلِيٍّ وَمُحَمَّدُ بْنُ سُلَيْمَانَ الْأَنْبَارِيُّ قَالُوا حَدَّثَنَا أَبُو أُسَامَةَ عَنْ الْوَلِيدِ بْنِ كَثِيرٍ عَنْ مُحَمَّدِ بْنِ كَعْبٍ عَنْ عُبَيْدِ اللَّهِ بْنِ عَبْدِ اللَّهِ بْنِ رَافِعِ بْنِ خَدِيجٍ عَنْ أَبِي سَعِيدٍ الْخُدْرِيِّ أَنَّهُ قِيلَ لِرَسُولِ اللَّهِ صَلَّى اللَّهُ عَلَيْهِ وَسَلَّمَ أَنَتَوَضَّأُ مِنْ بِئْرِ بُضَاعَةَ وَهِيَ بِئْرٌ يُطْرَحُ فِيهَا الْحِيَضُ وَلَحْمُ الْكِلَابِ وَالنَّتْنُ فَقَالَ رَسُولُ اللَّهِ صَلَّى اللَّهُ عَلَيْهِ وَسَلَّمَ الْمَاءُ طَهُورٌ لَا يُنَجِّسُهُ شَيْءٌ قَالَ أَبُو دَاوُد وَقَالَ بَعْضُهُمْ عَبْدُ الرَّحْمَنِ بْنُ رَافِعٍ. رواه أبو داود.

Narrated to us by Muhammad bin al-'Alā', al-Hasan bin 'Alī, and Muhammad bin Sulaimān al-Anbāriy, they said, "Narrated to us by Abū Usāmah from al-Walīd bin Katsīr from Muhammad bin Ka'b from 'Ubaidillāh bin 'Abdullāh bin Rāfi' bin Khadīj from Abū Sa'īd al-Khudriy that the Messenger of Allah (peace and blessings be upon him) was once asked, "May we perform ablution (*wudhū`*) with water from the Well of Budhā'ah? It is a well into which menstrual rags, dead dogs, and foul-smelling things are thrown." The Messenger of Allah (peace and blessings be upon him) replied, "Water is pure; nothing can render it impure." Abū Dāud said, "Some of them mentioned 'Abdurrahmān bin Rāfi' (replacing

'Abdullāh bin Rāfi')." (Narrated by Abu Dawud). (Dāud, n.d.).

The hadith is considered authentic (shahih) by Ahmad, while al-Tirmidhi graded it as good (hasan) (Al-Shan'āniy, n.d.). The chain of narrators (sanad) of this hadith is considered reliable (jayyid) and authentic by Yahyā bin Mu'īn and Abū Muhammad bin Hazm (Al-Mubārakfūriy, 2015). The credibility of the narrators of this hadith further strengthens its validity (Al-'Ibād, n.d.).

This hadith narrates about a well known to be used as a dumping ground for menstrual waste, dog carcasses, and other decaying matter. This hadith becomes complex when Prophet Muhammad, when asked about the ruling on performing ablution (*wudhū`*) using the water from this well, responded that water is fundamentally pure and cannot be defiled by anything. In short, this hadith indicates the permissibility of performing ablution with water from a well contaminated with impurities (najs), even though the water used for ablution must meet the criteria of being pure and purifying.

The Budhā'ah Well is located in Medina, north of the al-*Masjid al-Nabawiy (*Prophet's Mosque), precisely in Banū Sa'īdah Village, near Bab al-Shāmī (Al-Mubārakfūriy, 2015). This well has been restored along with the development of the city center around the al-*Masjid al-Nabawiy* ('Abdulgani, 1426).

Figure 1. Current Location of the Budhā'ah Well

Note: The location of the Budhā'ah Well is marked with a red arrow.

The well's water volume was abundant, exceeding two *qullah* (Al-Mubārakfūriy, 2015). According to the well's keeper's account to Qutaibah bin Sa'īd, the well's depth when full reached the point of pubic hair growth, while at low tide, it was below the 'awrah (area of the body that is considered private). Abū Dāud (Dāud, n.d.) once directly measured the well's depth using a shawl and obtained a result of six cubits. During the measurement, Abū Dāud observed a color change in some of the well's water.

This well was known to contain impurities. The narration of Abū Dāud through Ahmad bin Abī Syu'aib mentions the presence of human waste. The presence of this waste was not due to intentional dumping into the well but rather carried by floodwaters (Al-'Ibād, n.d.). The well's water continued to flow, although the opinion stating its flow reached the al-Basātīn area is refuted (Al-Mubārakfūriy, 2015).

The narration of al-Nasā`iy mentions that Prophet Muhammad performed ablution (*wudhū`*) at the Budhā'ah Well. Furthermore, the narration of al-Baihaqiy states that Sahl bin Sa'd al-Sā'idi once gave the Prophet drink from the well's water (Al-Bayhaqiy, 2003). Al-Mubārakfūri (Al-Mubārakfūriy, 2015) explains that this hadith refers to abundant water (more than two qullah) that does not become impure as long as its characteristics (color, taste, and odor) do not change. Sheikh al-Syāh al-Dahlawi adds that this applies if the impurity has been removed. Al-Sanadi (Al-Sanadī, n.d.) explains that the water of the Budhā'ah Well was only slightly affected by impurities.

The hadith regarding the Budhā'ah Well can be linked to modern wastewater recycling technology. Generally, there are similarities between the condition of the Budhā'ah Well and the wastewater recycling process, particularly in the equalization, anaerobic, and aerobic processes. The

Budhā'ah Well underwent a sedimentation phase, a period of still water, which allowed for equalization between incoming and outgoing water. The entry of dirt and impurities into the well is interpreted as a natural anaerobic and aerobic process (Robby, 2024).

Changes in water properties are also an important indicator in water recycling technology. Changes in color, odor, and taste are indicators of the quality of treated clean water (Suparno, 2013). In Islamic jurisprudence (*fiqh*), water that is mixed and changes in color, taste, or aroma is considered impure (*najs*). Consistent with fiqh, in wastewater recycling technology, treated water that has lost its color, taste, and aroma is considered not clean.

Color in water can be caused by dissolved chemicals or microorganisms (plankton). Color caused by chemicals (referred to as apparent color) has the potential to be harmful to humans, while color caused by microorganisms (true color) is generally not harmful. Water suitable for consumption must be clear and colorless, in accordance with the Indonesian Minister of Health Regulation Number 907 of 2002 (Wiyono, 2017).

The characteristics of the Budhā'ah Well indicate the possibility of sedimentation of solid particles, decomposition of organic matter, reduction of nutrients, and reduction of pathogenic organisms such as bacteria, worm eggs, and viruses. Thus, well water mixed with menstrual blood, dog carcasses, and decaying matter has the potential to become naturally clean again (Robby, 2024).

The determination of legal rulings based on the hadith of the Budhā'ah Well is still interpretative. Al-Mubārakfūrī (Al-Mubārakfūriy, 2015) argues that the water of the Budhā'ah Well is not impure because its volume far exceeds two qullahs (approximately 216 liters). This opinion is based on the hadith narrated by al-Hākim:

إذا كان الماء قلتين لم ينجسه شيء

(if the water reaches two qullahs, nothing makes it impure)

However, the hadith narrated by al-Tirmiżī adds:

إذا كان الماء قلتين لم ينجسه شيء ما لم يتغير ريحه أو طعمه

(if the water reaches two qullahs, nothing makes it impure as long as its odor or taste does not change)

This hadith raises questions regarding the mixture of menstrual blood, dog carcasses, and decaying matter into the well, which in *fiqh* is considered impure and not valid for purification.

This situation is relevant to modern wastewater recycling methods that sometimes utilize animal waste (Robby, 2024) and other impure substances. In this regard, the Indonesian Ulema Council (MUI) has issued Fatwa Number 02 of 2010 concerning recycled water. This fatwa permits the use of recycled water for ablution (*wudhū`*), bathing, purification from impurities, *istinjā`* (cleansing after excretion), drinking, cooking, and other purposes, as long as it does not endanger health. However, this fatwa stipulates the purity of the auxiliary tools used in the tharīqah taghyīr (change method) process. In practice, the auxiliary tools used often originate from microorganisms derived from waste or impurities. This inconsistency creates confusion among Muslims regarding the use of processed wastewater (The Indonesian Ulema Council's Fatwa on Water Recycling, 2010).

Consequently, there are differing interpretations of the Hadith of the Budhā'ah Well. Earlier scholars generally focused on the large volume of the well's water as the reason for its non-impurity, provided its characteristics did not change. However, a review of wastewater recycling technology reveals the presence of equalization, anaerobic, and aerobic processes within the well, which produce clean water again

through the aid of substances contained within it. This indicates the relevance of this hadith to the concept of modern wastewater recycling.

Possibly, the reason Prophet Muhammad performed ablution and even drank from the water of the Budhā'ah Well was not solely due to its volume, as explained by scholars. Another possibility is that it relates to the principles applied in modern wastewater recycling technology, namely the utilization of organic substances in the purification process. However, this interpretation has the potential to contradict the MUI fatwa on wastewater recycling, which creates confusion among the public regarding the use of processed wastewater.

Based on the foregoing, the understanding of the Hadith of the Budhā'ah Well needs to be re-examined by considering the modern context through a scientific approach to uncover its true meaning. Therefore, further research is needed using a scientific approach.

This research employs a qualitative approach with a case study on the Hadith of the Budhā'ah Well (Arikunto, 2013). Data collection methods include literature review, interviews, and field observations. The author has collaborated with PT Rofis Jaya Perkasa for interviews and field observations. Literature review is used because most of the data comes from existing references and sources. Field research is necessary to understand the developments and issues related to wastewater recycling technology. Hadith analysis is conducted using the theories of naqd al-sanad (chain of narrators criticism) and naqd al-matan (textual criticism), as well as the theory of fiqh al-hadīts (jurisprudence of hadith).

Discussion

The Condition of the Budhā'ah Well

The Budhā'ah Well was one of the wells located in Medina during

the time of Prophet Muhammad. Its location, agreed upon by almost all narrators and historians, was in the middle of the Bani Sa'idah settlement ('Abbasi, n.d.), only about 100 meters from the al-Masjid al-Nabawiy (Al-Syinqithi, n.d.). Al-Mathariy (Al-Mathari, 2005) added that this well was situated between two gardens and had clean water, thus being utilized for irrigation.

To provide a clearer depiction of the Budhā'ah Well's location, the following location maps are presented.

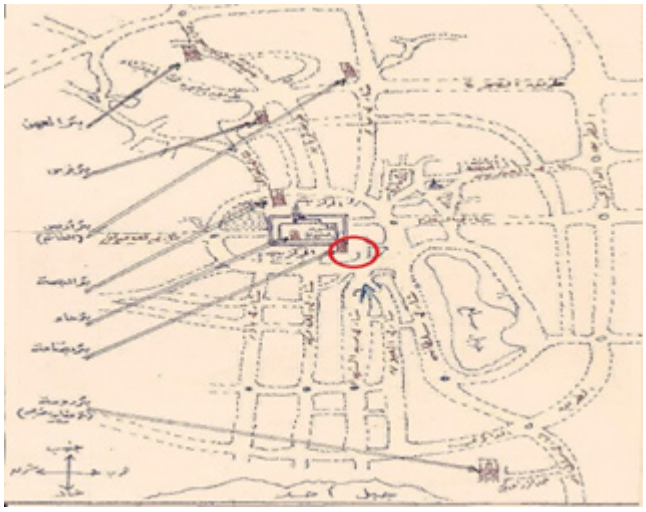

Figure 2. Location Map of the Budhā'ah Well

Figure 3. Map of Medina during the Prophet's Era

The analysis of the Budhā'ah Well's location map and the map of Medina during the time of Prophet Muhammad provides a more detailed picture of the well's condition. These maps indicate that the Budhā'ah Well was located near the Prophet's Mosque, to the north, in the direction of Mount Uhud. Several narrations also reinforce this position by mentioning the well's location north of the mosque.

Based on the maps, the Budhā'ah Well was also near Mount Sala' and specifically shows the location of the Bani Sa'idah settlement, where the well was situated. Al-Mubārakfūriy (Al-Mubārakfūriy, 2015) explained that the Budhā'ah Well was located in the Bani Sa'idah settlement, on the north side of the Prophet's Mosque, between two gardens. The maps depict the Budhā'ah Well as being in a densely populated and busy area, as it was not only close to the Prophet's Mosque but also near the Medina Market (Sūq al-Madinah).

Therefore, the maps implicitly illustrate that the Budhā'ah Well was located in a bustling area, close to the Bani Sa'idah settlement, the market, and the Prophet's Mosque. This locational context creates an image of a fairly dense location with the potential presence of various objects and impurities, as is common in market areas.

The gardens surrounding the Madinah market, including the Bani Sa'idah gardens adjacent to the Budhā'ah Well, were likely used as latrines, particularly by those working in the market (Khuzaymah, 1970). This reinforces the possibility of substances mentioned in the Hadith of the Budhā'ah Well (such as *"al-Haidh"* [menstrual blood] and *"al-Kalb"* [dog]) entering the well, either blown by the wind or carried by water from crowded areas such as the market, shops, and even residential areas surrounding the well. This scenario can be visualized through a location map.

The well's location on sloping terrain facilitated the flow of water

carrying various materials, including waste, into it (Al-'Ainiy, 2013). Accounts from 'Ā'ishah indicate that the Budhā'ah Well was connected to a water channel leading to the Khazraj tribe's settlements and their surrounding farmlands (Nāshif, n.d.), which irrigated five to seven gardens (Mughalthāy, 1999). This condition, according to al-Khaththābiy, explains why it was uncommon for the people of Madinah at that time to dispose of anything, especially waste, into wells, considering Madinah's desert environment with limited water availability and high demand (Al-'Ainiy, 2013).

Testimony from Ibn Salamah, supported by al-Wāqidī and al-Thahāwī, further strengthens this depiction by explaining that the opening of the Budhā'ah Well was lower than the surrounding gardens. Consequently, rainwater carried various materials, including soil, from the gardens into the well (Al-Samhudi, n.d.). This is expressed metaphorically by describing the surrounding gardens as if they were "melting," illustrating how water touching the soil carried these materials into the well.

Regarding the origin of the substances that entered the Budhā'ah Well, al-Shinqithi refutes the possibility of the companions intentionally discarding impure substances into the well, given the Prophet's prohibition against contaminating water sources and public places. Al-Shinqithi offers two explanations: first, these impure substances were intentionally discarded by Jews and hypocrites, considering the well's proximity to the Jewish Bani Khazraj settlements in Madinah; second, these items fell accidentally, carried by wind or rainwater, a view supported by Abū Salamah, al-Ismā'iliy, al-Wāqidī, and al-Thahāwī (Al-Syinqithi, n.d.). Al-Syinqithi considers the second explanation more plausible.

Concerning the impact of these substances on the well's water

quality, there are two opinions. Abū Dāud in Sunan Abī Dāud (Dāud, n.d.) states that the well water underwent changes. However, the validity of Abū Dāud's observation needs to be considered, given the potential difference in the well's condition during his time compared to the Prophet's era, as well as the potential for well shrinkage over the centuries. Nevertheless, if Abū Dāud's observation is linked to the location and geographical conditions of the Budhā'ah Well, the change in water color could be attributed to soil carried by water flow. Abū Dāud only noted a change in color, without mentioning any change in odor. A different view is presented by al-Syāfi'iy (Al-Syafi'i, 1985), who states that despite numerous substances entering the well, the water's condition remained unchanged in color, odor, and taste due to its large volume.

This debate then focuses on the water volume of the Budhā'ah Well. Based on Abū Dāud's account (Dāud, n.d.), the maximum water level reached approximately 150 cm (the height of an Arab man's pubic area), and the minimum level was about 60 cm (below the knee). Its diameter, based on the measurement of six *dzirā' hāsyimī* (1 *dzirā'* = 61 cm) (Al-Ra`īs, 1969), was 3.66 meters. Thus, the maximum water volume of the well is estimated at 15,773 liters, and the minimum volume at 6,309 liters. This calculation demonstrates that the water volume of the Budhā'ah Well, both in normal and low-water conditions, consistently exceeded two *qullah* (Muhajir, 2014), which supports al-Syāfi'iy's opinion regarding the large volume of water.

Based on this explanation, the condition of the Budhā'ah Well—a well located in a crowded and densely populated area, with surrounding gardens likely used for defecation—prompted Abū Sa'īd al-Khudriy to inquire of the Prophet about the status of its water. Currently, the Budhā'ah Well is located near the Bāb al-Syāmī area and has been restored during excavations around the Prophet's Mosque for urban

development (‘Abdulgani, 1426).

The Hadith of Water Recycling According to the Schools of Islamic Jurisprudence (al-Madzāhib al-Arba‘ah)

This section presents the views of the four schools of Islamic jurisprudence (madzāhib) in understanding and practicing the hadith of the Budhā‘ah Well concerning the law of recycled water.

The Hanafi School (Madzhab al-Ahnāf)

Scholars within this school explain that the reason the Prophet performed ablution with water from the Budhā‘ah Well was that the water flowed to several surrounding gardens. This explanation is based on a narration from al-Wāqidiy, who stated that the Budhā‘ah Well had water channels leading to plantations (Al-Mubārakfūriy, 2015). According to this school, flowing water cannot become impure (*najs*) due to contact with impurities.

If the well is not considered to contain flowing water, then the majority of scholars in this school opine that the well water becomes impure even if its volume reaches the size of two *qullahs* (Al-Himām, n.d.). This opinion is based on the narrations of al-Thahāwiy and Ibn Abī Syaibah from ‘Athā’. It relates that a man from Ethiopia fell into the Zamzam Well and died. Ibn al-Zubair ordered its water to be drained so that its flow would not be interrupted. When it was observed that the spring of water reappeared from the side of the Black Stone (*al-Ḥajr al-Aswad*), Ibn al-Zubair stopped the draining. Based on this narration, the majority of al-Ahnāf school scholars do not utilize the hadith of two qullahs (Al-Mubārakfūriy, 2015).

The Hanbali School (Madzhab al-Hanābilah)

Prominent scholars within this school hold the view that the

water in the Budhā'ah Well becomes impure if it is less than two qullahs. However, if it reaches the size of two qullahs or more, then it does not become impure as long as it does not undergo changes in color, taste, or odor (Qudāmah, n.d.). They refer to the provision of the hadith of two qullahs and simultaneously consider the hadith of the Budhā'ah Well to be analogous to the condition of other wells, using the measurement of two *qullahs* as the limit.

Scholars within this school of thought categorize impure water into three conditions:

Water less than two *qullah*s: Purification is achieved by increasing the water volume until it reaches two qullahs, either by adding water directly or through a natural spring. This process continues until the impurity's effects (changes in color, taste, or odor) are no longer discernible. If the water's properties remain unchanged despite the presence of impurity, simply increasing the water volume is sufficient.

Water equal to two *qullah*s: If the water's properties remain unchanged, increasing the water volume is sufficient for purification. However, if the water's properties are altered by the impurity, purification can be achieved in two ways: by adding more water until the changes disappear or by allowing the water to stand until the changes naturally dissipate.

Water exceeding two q*ullahs***:** If the water's properties are altered, there are three methods of purification. First, by increasing the water volume. Second, by letting it stand until the changes disappear. Third, by removing the affected portion, ensuring the remaining water is still at least two qullahs. If, after removing the affected portion, the remaining water is less than two qullahs and the changes persist, the impurity is then attributed to the insufficient volume rather than the initial alteration, and simply removing the changes will not purify it.

The Mālikī School (Madzhab al-Mālikiyyah)

Scholars of the Mālikī school maintain that well water is deemed impure if its color, taste, or odor changes (Anas, 1994). This school uses the Hadith of the Budā'ah Well as evidence that water is inherently pure and purifying and cannot be rendered impure by contact with impurities unless its color, taste, or odor is altered. They emphasize that this ruling is based on the condition of the Budā'ah Well, which contained still, non-flowing water (Al-Khaththābiy, 1932).

Regarding a well contaminated by a dead gecko or rat, Mālik bin Anas suggests that the well water should be drained until the odor of the impurity is no longer detectable (Anas, 1994). Therefore, if a body of water is exposed to something that does not alter its color, taste, or odor, it remains pure and requires no action. However, if the water's properties are altered, the contaminating substance and a surrounding portion of water should be removed until the odor is no longer perceptible.

The Shāfi'ī School (Madzhab al-Syafi 'iyyah)

Scholars of the Shāfi'ī school base the purity of the Budā'ah Well on the measure of two *qullahs*. If the water reaches two qullahs or more, it is considered pure as long as none of its properties (color, taste, or odor) are altered. However, if the water is less than two *qullahs*, it is considered impure even if no changes in its properties are observed (Al-Nawāwiy, n.d.).

They rely on the hadith of the two qullahs, which indicates that water less than two qullahs becomes impure upon contact with impurity. Conversely, water measuring two qullahs or more remains pure unless its color, taste, or odor is altered. Thus, Shāfi'ī scholars equate the condition of the Budā'ah Well with that of any other well.

Shāfi'ī scholars treat well water and other water sources similarly

concerning contamination. If water less than two *qullahs* becomes impure, it is not recommended to drain the well. Instead, it is preferable to allow it to refill naturally from its source until it reaches two *qullahs*. If the source is insufficient, water from outside the well can be added until the volume exceeds two *qullahs* and the changes disappear. If a large quantity of pure water is exposed to an impurity that does not alter its properties, it remains pure and purifying, and its use is considered permissible (Al-Nawāwiy, n.d.).

Interpretation of the Hadith on Recycled Water

Sabab al-Wurūd

The Hadith of the Budhā'ah Well has a *sabab wurūd* in the form of a question posed by a companion to the prophet regarding the permissibility of performing ablution using water from the Budhā'ah Well. In this question, the questioner also included a description of the condition of the Budhā'ah Well. However, the name of the companion who asked the question is unknown.

Islamic jurists apply this hadith using the principle of *al-'ibratu bi 'umum al-lafdzi* (taking into account the general meaning of the wording), as explained in *al-Muhadzdzab* (Al-Syairāziy, n.d.). It is stated that if a najis (impure substance) falls into water, the water does not become najis as long as its color, odor, or taste does not change. The addition of color, taste, and aroma as criteria is based on *ijmā'* (scholarly consensus). This is also in accordance with al-Syāfi'iy's explanation in *Ikhtilāf al-Hadīts*. He argues that the word *al-mā*' (the water) encompasses all water, whether in small or large quantities. This is based on the Hadith of the Budhā'ah Well as a general (*'āmm*) hadith that can be specified (*takhshīsh*) by other hadiths.

However, hadith scholars understand this hadith by applying

the second principle. Thus, they explain that the prophet's response regarding the purity of water is due to the abundant volume of water in the Budhā'ah Well. Similarly, according to al-Qāsim's opinion, based on this hadith, water, whether in large or small quantities, that comes into contact with najis remains thahūr (pure and purifying) as long as its characteristics do not change (Rusyd, 1988).

Therefore, this hadith can be understood through the generality of its wording, stating that water will not become najis, positioning it as a 'āmm hadith. Alternatively, understanding it through the context of its sabab wurūd leads to the understanding that water exposed to najis does not become najis due to the large and abundant quantity of water.

Matn Criticism

In critiquing the *matn* (content) of a hadith, it is compared with relevant verses of the Qur'an and other prophetic hadith. Based on research, the Budhā'ah Well hadith is considered related to the Qur'anic verses of al-Anfāl (8):11

إِذْ يُغَشِّيكُمُ النُّعَاسَ أَمَنَةً مِنْهُ وَيُنَزِّلُ عَلَيْكُمْ مِنَ السَّمَاءِ مَاءً لِيُطَهِّرَكُمْ بِهِ وَيُذْهِبَ عَنْكُمْ رِجْزَ الشَّيْطَانِ وَلِيَرْبِطَ عَلَى قُلُوبِكُمْ وَيُثَبِّتَ بِهِ الْأَقْدَامَ

and al-Furqān (25):48

وَهُوَ الَّذِي أَرْسَلَ الرِّيَاحَ بُشْرًا بَيْنَ يَدَيْ رَحْمَتِهِ وَأَنْزَلْنَا مِنَ السَّمَاءِ مَاءً طَهُورًا.

Ibn Katsīr (Katsīr, 1419) states that this verse is in line with the hadith being researched by the author. In this context, the function of water is certainly not only as a purifying agent but also a source of life for needs such as consumption. The Arabs, in this case, heavily relied on rainwater in their lives (Shihab, 2002). Likewise, the water source of the Budha'ah Well also comes from rainwater. This demonstrates a munāsabah (relevance) or connection that rainwater is truly a blessing from God for the Arab people, who greatly depend on it as a source of

life, with the sacred status that God has assigned to this water. Indirectly, this verse endorses the hadith being researched by the author, which affirms that the water of the Budha'ah Well is pure and purifying.

The hadith of the Budha'ah Well, which describes the characteristics of the well with various types of impurities falling into it, does not automatically render it unusable for purification. Scholars explain that the question from the Companions in this hadith, which was then answered by the Prophet with:

"طهور لا ينجسه شيء الماء"

(water is pure and nothing can make it impure)

Indicates that the water was abundant and met the requirements as purifying water, namely more than two qullahs. Although it is not explicitly mentioned in the hadith that the water of the Budha'ah Well reached two qullahs (Al-Khaththābiy, 1932).

This is supported by several other hadith. Among the strengthening hadith is that water exceeding two qullahs is not considered impure if none of its taste, smell, or color changes, as follows.

حَدَّثَنَا هَنَّادٌ، قَالَ: حَدَّثَنَا عَبْدَةُ، عَنْ مُحَمَّدِ بْنِ إِسْحَاقَ، عَنْ مُحَمَّدِ بْنِ جَعْفَرِ بْنِ الزُّبَيْرِ، عَنْ عُبَيْدِ اللَّهِ بْنِ عَبْدِ اللَّهِ بْنِ عُمَرَ، عَنْ ابْنِ عُمَرَ، قَالَ: سَمِعْتُ رَسُولَ اللَّهِ صَلَّى اللَّهُ عَلَيْهِ وَسَلَّمَ وَهُوَ يُسْأَلُ عَنِ المَاءِ يَكُونُ فِي الفَلَاةِ مِنَ الأَرْضِ، وَمَا يَنُوبُهُ مِنَ السِّبَاعِ وَالدَّوَابِّ؟ قَالَ: فَقَالَ رَسُولُ اللَّهِ صَلَّى اللَّهُ عَلَيْهِ وَسَلَّمَ: إِذَا كَانَ المَاءُ قُلَّتَيْنِ لَمْ يَحْمِلِ الخَبَثَ.

The hadith states that if water exceeds two qullah, especially if it is flowing, it will not become impure. Al-Syafi'i, Ahmad, and Ishaq explained that if the water exceeds two *qullah*s, it is not considered impure as long as its taste, color, and odor remain unchanged (Al-Suyūthī, 1424).

A literal interpretation of this hadith might suggest that people deliberately discarded waste into the Budha'ah Well. This is unlikely,

considering Medina's desert environment and the crucial need for water sources. This is further supported by Ibn Ahmad al-'Ibād al-Badr's explanation that the presence of dirt and impurities in the Budha'ah Well does not imply intentional disposal by the community. Rather, it is due to the well's low-lying location, causing runoff from higher ground to flow into it. Thus, the source of the impurity was not concentrated within the well itself but had already mixed with water from various locations (Al-'Ainiy, 1999). Therefore, the consideration is that the impurities were remnants of runoff, compounded by the well's abundant water volume, far exceeding two *qullahs*.

A superficial understanding of the Budha'ah Well hadith might suggest that the Prophet permitted ablution, bathing, and drinking from impure water, leading to a distorted interpretation. However, this understanding is refuted by the fact that the Budha'ah Well contained abundant water, preventing any actual change in its properties (Al-Khaththābiy, 1932). This is further substantiated by other supporting hadith, such as the hadith of two *qullahs* and the hadith concerning the purity of water as long as its color, taste, and odor remain unchanged. Consequently, the meaning of the Budha'ah Well hadith is not that ablution from impure water is permissible, but rather that the water itself did not undergo any alteration.

Analysis of the Hadith Regarding Recycled Water

Generally, a well is a place with a certain depression or depth that can be filled with groundwater, seepage water, or surface water. Surface water can originate from rainwater flowing into the ground, carrying pollutants, and subsequently filling the Budhā'ah Well. The operating condition of well water contaminated during rainfall or at specific times and then stored in the well until use is termed a batch operation. In contrast, a continuous operation is typically when the inflow equals the

outflow simultaneously (Eddy, 2013).

Based on its objective conditions, the Budhā'ah Well operates under a semi-batch condition, where rainwater carrying pollutants enters and remains until it is degraded or broken down by microorganisms. The pollutants then settle, similar to modern contaminated water recycling processes. Furthermore, water from the Budhā'ah Well is frequently drawn to irrigate surrounding gardens. Thus, some water exits the well at certain intervals (Robby, 2024).

From a scientific perspective, considering the conditions and facts about the Budhā'ah Well, its water potentially undergoes a recycling process similar to modern water recycling. The factors contributing to the Budhā'ah Well's potential suitability for purification are as follows:

Pollutant Load

The pollutant load entering the Budhā'ah Well has the potential or tendency to be decomposed by microorganisms (Mudatsir, 2010), such as Chemical Oxygen Demand (COD) and Biological Oxygen Demand (BOD) (Alfrida E. Suoth and Ernawita Nazir, 2016). The Budhā'ah Well was known to contain something foul-smelling *(al-Natnu)*. Thus, what initially had an unpleasant taste and odor is restored to a better state through the action of microorganisms (Mubin, 2016). This is supported by the fact that the Budhā'ah Well is exposed to contaminants that serve as nutrients for microorganisms.

Given that the Budhā'ah Well is not a waste disposal site, the pollutant load is only brought by rainwater carrying pollutants, carcasses, domestic waste, or dead animal remains. However, this pollutant load is considered relatively light and thus can be decomposed (Robby, 2024). The principle is that the lower the pollution load, the faster the purification process occurs (Nugroho, 2014).

Flow Rate

In wastewater recycling, it is necessary to determine the amount of incoming wastewater per unit of time. This is done by determining the per capita wastewater flow rate. This influences the retention time and possible changes that occur in the well. The formula for calculating flow rate is volume divided by flow time (Robby, 2024).

Retention Time

Retention time refers to the period when the well is not receiving pollutant load. During this time, the well undergoes a sedimentation process. The longer the contact time between the waste and its media, the greater the separation efficiency (Parasmita et al., n.d.). This retention time depends on the growth rate of microorganisms and the waste load (Ahammad, 2013). In the context of the Budhā'ah Well, with infrequent rainfall in the Madinah area, the flow of wastewater-carrying water does not occur frequently. Similarly, water extraction for needs is also not always continuous. This results in periods of quiescence (Robby, 2024).

Volume

The magnitude of the volume will affect the possibility and extent of contamination.

Microorganisms

The microorganisms present in the Budhā'ah Well can be aerobic and anaerobic. The treatment process that occurs with the presence of molecular oxygen (O2) and uses aerobic respiration to generate cell energy is called the aerobic process. These microorganisms are metabolically most active but also produce more residual solids as cell mass. Anaerobic processes, on the other hand, occur without oxygen and result in sulfate reduction and methanogenesis. They typically produce biogas as a useful byproduct and tend to generate a lower amount of

biosolids (Ahammad, 2013).

Microorganisms function to decompose material content, which, after decomposition, becomes their breeding ground (Indonesian Institute of Sciences (LIPI), n.d.). To accelerate the degradation process, microorganisms require nutrients. These nutrients are obtained from the waste entering the well. In the case of the Budhā'ah Well, it is known that waste comes from dog carcasses, menstrual blood, and human waste. All of these become nutrients for the microorganisms (Robby, 2024).

Sedimentation

This stage occurs during sedimentation. The process involves separating solid particles from the wastewater. After undergoing chemical and biological processes, the solids will settle by gravity (Hendartini, 1995). In the case of the Budhā'ah Well, incoming water carries waste. This waste is then degraded by microorganisms and converted into vapor. The materials that do not become vapor will settle as sludge (Robby, 2024).

Accelerators

Several additional factors can accelerate the process, including temperature. Microorganisms will not survive at extremely high or low temperatures. The optimal temperature for microbial growth is 35–37°C (Ahammad, 2013). Another factor is the presence of rocks. Rocks release electricity and help clarify the water. This is further supported by the presence of sand. Sand is very useful in performing filtration. Filtration is carried out to remove suspended solids from the treatment effluent (Trantika, n.d.).

Supporting Data

Several factors influence the accurate assessment of the objective

condition of the Budhā'ah Well. These include:

Geographical Conditions of Medina

Saudi Arabia, a country with limited rivers, relies heavily on wells and seawater desalination. Medina is situated 600 meters above sea level and characterized by a dry desert climate from May to September. During this period, minimum temperatures reach 27°C, while maximum temperatures can soar to 47°C, resulting in a high average temperature of approximately 37°C due to its location between mountain elevations and surrounding heat. This average temperature decreases during winter, particularly in January, with minimum temperatures dropping to 7°C and maximum temperatures reaching 29°C (Saudi Arabian General Authority of Meteorology and Environment Protection, n.d.).

Medina's rock structure is primarily surrounded by basalt rock to the east, west, and south. Other geological formations from the Precambrian era exist, intermingled with volcanic rock and porous volcanic ash. The soil in the area surrounding the Prophet's Mosque (al-Masjid al-Nabawiy) is clayey, containing high salt content, but is easily reclaimed. This area represents 19.1% of Medina's non-rocky land area (Madinah Research and Studies Center, n.d.-a).

Demographics of Medina

Medina's population in the period preceding Islam ranged from twelve to fifteen thousand inhabitants. Following the migration (*hijrah*) from Mecca to Medina and until the Prophet's death, the population grew to approximately thirty thousand (Madinah Research and Studies Center, n.d.-b). The combined population of the Aus and Khazraj tribes is estimated to have reached 200,000 (Syauqiy, 2003) dispersed around the Prophet's Mosque.

Based on available maps and data, it is estimated that

approximately 50 families resided near the Budhā'ah Well, out of the total population of 200,000. Assuming an average of five members per family, the total population in the vicinity of the well would be 250. This estimation allows for calculating the potential for the Budhā'ah Well to regain clarity.

The estimated inflow into the well is 5,000 liters per day, based on an assumption of 20 liters of wastewater produced per person out of the typical 50 liters. Calculation: 20 x 250 = 5,000 L = 5 m^3 per day. The Chemical Oxygen Demand (COD) is 700 mg/L, and the Biological Oxygen Demand (BOD) is 350 mg/L, based on the highest polluted load from domestic waste, considering the presence of a dog carcass. Total Suspended Solids (TSS), which influence water color, is 300 mg/L, also based on the highest domestic waste load.

Given Medina's arid climate and its elevation of 600 meters above sea level, the Budhā'ah Well's depth is estimated to be approximately 300 meters. Based on data regarding its dimensions from Abū Dāud, the approximate volume of each layer of the well was calculated, assuming the following shape:

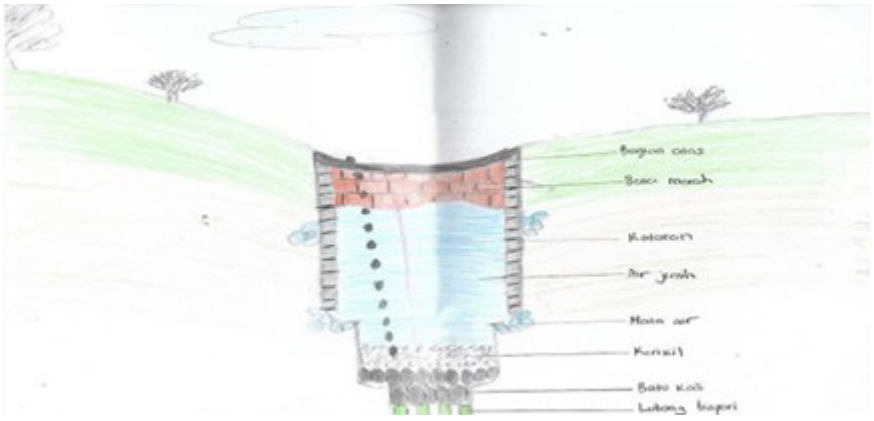

Figure 4. Schematic Representation of the Budhā'ah Well

The volume calculations for each layer are as follows:

Layer 1 (Lip): Volume = ¼ x π x d^2 x t = ¼ x 3.14 x 3.66 x 3.66 x

1.5 = 15.773319 m^3

Layer 2: Volume = ¼ x 3.14 x 3 x 3 x 10 = 70.65 m^3

Layer 3: Volume = ¼ x 3.14 x 2 x 2 x 10 = 31.4 m^3

Layer 4: Volume = ¼ x 3.14 x 2.8 x 2.8 x 10 = 61.544 m^3

The total volume (V₁ + V₂ + V₃ + V₄) is 15.773319 m^3 + 70.65 m^3 + 31.4 m^3 + 61.544 m^3 = 179.367319 m^3. The residence time (calculated as volume/flow rate) is 179.367319 m^3 / 5 = 35.8734638 days.

This calculation indicates that 35 days is sufficient for water purification within the well. With the assistance of rocks and sand, this process could potentially be completed in less than one month. Moreover, the figures used in these calculations are likely overestimations, suggesting that the actual purification time could be shorter. Therefore, it is highly plausible that the Budhā'ah Well undergoes a natural water recycling process. This timeframe allows sufficient time for equalization (stabilization of waste for bacterial consumption), anaerobic decomposition (waste breakdown by anaerobic microorganisms), aerobic decomposition (waste breakdown by aerobic microorganisms), and sedimentation (settling of decomposed particulate matter).

Processes within the Budhā'ah Well

A simplified experiment involving the introduction of cow manure, chicken meat, and blood can illustrate the processes occurring within the Budhā'ah Well.

Within the Budhā'ah Well, waste materials such as animal carcasses (e.g., dog carcasses), menstrual blood-soaked cloths, putrid substances, and human excrement are classified as domestic waste. These materials contain bacteria, including free-swimming bacteria and ciliates, which also serve as nutrients for other bacteria. Consequently,

these bacteria thrive by consuming the waste. When rainwater carries waste into the well, thorough mixing occurs.

Equalization: This stage is illustrated in Figure 5.

Figure 5. Hydrolysis

After the excrement, along with rainwater, enters the well and is stirred, equalization occurs. Subsequently, hydrolysis takes place, which is the decomposition of water and excrement. This is followed by acidification, which is the acidification due to carbon dioxide absorption. This process lasts for 8 hours with the aid of stirring.

Anaerobic and aerobic (facultative). This can be seen in the following figure.

Figure 6. Facultative

After acidification, aerobic and anaerobic bacteria originating from the excrement that entered the well decompose the waste or the

excrement itself. This process can occur simultaneously between aerobic and anaerobic processes, as well as individually. With the aid of stirring, this process takes place for three days.

Reduction and oxidation. All stages undergo reduction, which is the release of oxygen, and oxidation, which is the binding of oxygen. This process occurs with the assistance of rocks. This process results in what is shown in the figure:

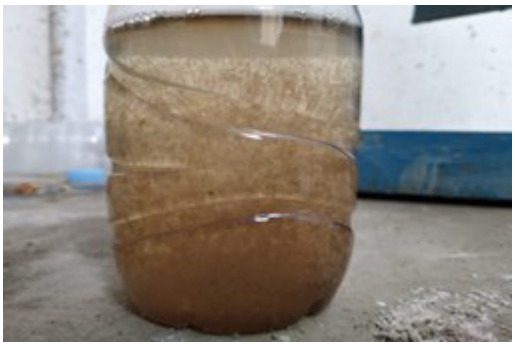

Figure 7. Anaerobic Sedimentation Results

The excrement breaks down and then settles or sediments. Consequently, bacteria utilize the bottom area of the well as their growth site. As a result, the upper part becomes clearer.

Figure 8. Sedimentation

In the next stage, with a retention time of approximately two hours, clear water suitable for disposal is produced in accordance with the Indonesian Minister of Health Regulation (Permenkes RI) Number

416 of 1990, one of which is the color and aroma, as shown in the figure:

Figure 9. Treated Water

The indicators of water clarity are observed through color, taste, and aroma. In this experimental process, acceleration is aided by using a stirrer and rocks, as shown in the following figure.

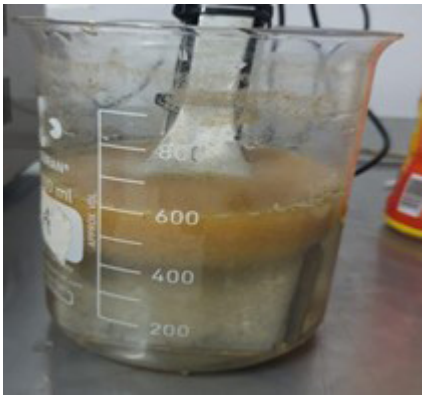

Figure 10. Acceleration with Rocks

This experiment demonstrates that the Budha'ah Well can function as a tool in the wastewater recycling process through a semi-batch operation. The primary determining factor in this process is residence time. Based on calculations, considering the infrequent entry of contaminants into the Budha'ah Well, supported by low rainfall and the geological structure of the Medina region, this process is feasible.

The water used in this experiment was only about 1 liter, which does not meet the two *qullahs* definition of 270 liters. However, it was observed that the water could return to a clear state, adapting to the

conditions within the Budha'ah Well. Therefore, the volume of water does not significantly influence this process; rather, it is the balance between the flow rate and the contaminant load that is crucial. Thus, from a scientific perspective, although the Budha'ah Well initially experiences changes in color, taste, and aroma due to the introduction of contaminants, the well's media, through its natural processes, can purify the water without requiring draining, waste removal, or the addition of extra water.

Understanding the Hadith of the Well of Budhā'ah with Scientific Considerations

As a result of the previous analysis, from a scientific perspective, the Well of Budhā'ah can be categorized as a medium or tool for water recycling through a semi-batch process. This indicates that the determinants of change in water are discharge and pollutant load related to residence time.

The Hadith of the Well of Budhā'ah can be understood by considering the sabab wurūd (the circumstances of its utterance) and also by referring to the general wording of the hadith. If this hadith is understood by associating it with its sabab wurūd, then scholars understand this hadith to mean that water does not become impure due to the fact that the Well of Budhā'ah had an abundant volume and did not undergo changes.

If this hadith is understood through a scientific perspective, the focus shifts to the content of contaminants in the Well of Budhā'ah. The scientific view reinforces the logic that the well water undergoes a natural purification process and returns to clarity, not that it experiences absolutely no changes. This perspective shifts the focus from the quantity of water (as explained by al-Mubārakfūriy in Tuhfah al-Ahwadziy

regarding the use of well water when clean) to the natural processes that occur within it. The community's practice of using well water when clean indicates a change in water quality. If associated with the narration of the prophet performing ablution, drinking, and the use of well water for bathing by the sick, the previously developed understanding of the hadith would raise questions and speculations regarding the condition of the well being contaminated with impurities. Questions such as how the Prophet could perform ablution or drink from water considered impure create doubt, prompting the Companions to ask the prophet directly.

However, if understood from a scientific perspective, it can be understood that the events of the Prophet performing ablution, drinking, and the community bathing from the Well of Budhā'ah occurred when the water had become clear. The dirt or impurities present would settle to the bottom of the well, thus the water on the surface became clear. This is supported by the information that the water of the Well of Budhā'ah was abundant and could also irrigate the surrounding plantations.

Based on the narration of the Prophet drinking from the Well of Budhā'ah, it also proves that there are accelerating factors in the water recycling process, namely the presence of rocks, sand, and nutrients derived from the impurities themselves. This is also supported by the information that the well water was frequently used, meaning there is a mixing process on the surface that can provide oxygen for aerobic bacteria, thus the bacteria become alive and very active.

If this hadith is understood by the general wording, scholars limit its generality with the hadith of two qullah (large earthen jars). Based on studies that have been conducted, the size of two qullah also varies, even the al-Ahnāf school does not use it. If following the two qullah measurement of the al-Syāfi'iyyah school, then the size is 500 rithl or 270 liters. Thus, scholars understand this hadith to mean that if it is

more than two qullah, it will not become impure. This provision is then continued with the consensus (ijmā') of color, taste, and aroma. Thus, if there is a change in color, taste, and aroma, even if it exceeds the size of two qullah, it is considered impure.

This understanding shows that scholars actually agree on the provision of changes in color, taste, and aroma, not on the provision of two qullah. In this regard, the Hadith of the Well of Budhā'ah, if understood from a scientific perspective, does not consider the volume of water at all. The clarity indicators used in science include color and aroma. This is also in line with the Indonesian Ministry of Health Regulation number 416 of 1990. The explanation is that color in water is caused by chemical substances or microorganisms (plankton) dissolved in the water. Color caused by chemical substances is called apparent color, which is harmful to the human body. Color caused by microorganisms is called true color, which is not harmful to health. Water suitable for consumption must be clear and colorless (Suparno, 2013). It is true that there is a hadith regarding two qullah, which then becomes a takhshīsh (specification) for the Hadith of the Well of Budhā'ah. However, from a scientific point of view, this does not guarantee that no changes occur.

Thus, the Hadith of the Well of Budhā'ah understood in a scientific perspective, is more in line with the ijmā' of scholars. That clear water in the scientific category certainly meets the provisions of color, taste, and aroma in the ijmā' of scholars. Likewise, if it is confirmed that there is no change in color, taste, and aroma, then it should be clear in the scientific category.

The Prophet's answer by omitting the word *"Na'am"* (yes) is actually because the status of the water of the Well of Budhā'ah remained contaminated and impure with the presence of dirt and impurities that entered. However, water with the well as a medium will carry out a

water recycling process, so in essence, water cannot be made impure by anything.

Conclusion

This study's conclusion highlights how a scientific perspective can provide new insights into the hadith of the Budhā'ah Well. The community's use of the well's water for various purposes, despite the well receiving rainwater carrying various contaminants—such as menstrual rags, putrid objects, human waste, and carcasses—indicates a natural purification process. From a scientific standpoint, the presence of these contaminants actually triggers a series of biological and chemical processes that ultimately restore water quality.

Traditional approaches to understanding this hadith, both generally (ʻāmm), which state that water is not impure, and based on the sabab wurud (context of revelation) emphasizing the large volume of water, do not adequately explain the natural purification phenomenon that occurs. Although comparisons with takhshish hadith confirm that changes in water properties due to impurities invalidate its purity according to fiqh (Islamic jurisprudence), the focus remains on fiqh rulings and gives less consideration to natural processes. A scientific perspective offers an alternative explanation: that water can undergo purification through natural processes, with water discharge, pollution load, and retention time as determining factors. These processes involve mechanisms such as sedimentation, natural filtration, and the activity of microorganisms that decompose organic matter.

Thus, this study concludes that understanding the hadith of the Budhā'ah Well can be enriched by a scientific approach. The presence of contaminants in the well does not automatically render the water permanently impure; rather, it triggers natural purification processes

that are relevant to the modern concept of wastewater recycling. This perspective does not negate *fiqh* rulings regarding changes in water properties, but it offers a scientific explanation of how these purification processes can occur, thus providing a more comprehensive and contextual understanding of the Prophet's hadith. This study opens opportunities for further research to examine other hadith using an interdisciplinary approach between hadith studies and science.

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