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DO BLIND PEOPLE DREAM?

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DOI: 10.35631/IJMOE.728090**This work is licensed under** [CC BY 4.0](#)**Abstract:**

This paper aims to delve deep into whether or not blind people dream and have visual imagery. The researchers also aim to analyze the differences of dreams in blind individuals, individuals with sight impairment and people with sight abilities while also analyzing whether the three groups experience different ways of visual imagery in dreams. The answer for all three research questions is yes and will be explained deeper in the paper based on findings from past studies. To further illustrate, this paper has explained dreams in blind individuals physiologically and through Freud's psychodynamic theory of dream. As such, these insights indirectly contributed in understanding the best intervention that is possible to be implemented like utilizing advanced technology to ease the everyday routine of blind individuals especially students. For a better understanding as a Muslim, the researchers have provided valuable insight by looking at dreams and blindness disability from the Islamic standpoint. Future research should focus on studying neuroimaging by utilizing technologies like fMRI to bridge the gaps.

Keywords:

Dreams, Blindness, Congenital Blindness, Acquired Blind, Psychodynamic, Physiology

Introduction

Sleep is a fundamental biological necessity, essential for human survival alongside food and water. Research suggests that humans spend approximately one third of their lives asleep (Ezewanne, 2024). From an evolutionary perspective, sleep serves adaptive functions that support survival and reproduction in both humans and animals. One of the most extensively studied stages of sleep is rapid eye movement (REM) sleep, during which individuals awakened are most likely to report dreaming (Brinkman et al., 2023; Kalat, 2023). Beyond its association with dreams, sleep plays a crucial role in memory consolidation, emotional regulation, and neural restoration. In particular, REM sleep has been linked to the consolidation and retention of memory, as well as the regeneration and restoration of neural tissue within the brain (Ezewanne, 2024; Kalat, 2023).

While sleep itself is vital for physiological and cognitive functioning, the present research focuses specifically on dreaming and how it manifests in individuals with blindness. Dreaming is a near-universal human experience in which the brain generates internally produced scenarios that may reflect recent events, emotional concerns, or imagined situations (Mathes & Pietrowsky, 2022, as cited in Setareh et al., 2024). Dreams often involve vivid sensory experiences and emotionally charged narratives, despite frequently lacking logical coherence and being easily forgotten upon waking. For most sighted individuals, dreams are predominantly visual in nature, reflecting the activation of sensory, motor, and emotional brain regions during REM sleep (Ezewanne, 2024). This neural activation may explain why dreams often feel realistic and closely resemble waking experiences.

From a psychological perspective, dreams have been conceptualised in various ways. According to the APA Dictionary of Psychology (n.d.), dreams are defined as internally generated sensory, motor, and emotional experiences that occur during sleep and are influenced by both physiological and psychological states. Psychoanalytic theory, most notably proposed

by Freud, conceptualised dreams as symbolic expressions of unconscious desires that are otherwise socially unacceptable, allowing individuals to fulfil wishes in disguised or imaginary forms (Freud, 1900; Jay, 2025). However, such explanations do not account for dreaming in non-human animals, suggesting limitations in purely psychodynamic interpretations. In contrast, contemporary physiological theories view dreams as a by-product of neural activity and memory processing during sleep, emphasising the brain's role in integrating and reorganising information acquired during waking life (Tsunematsu, 2023).

Although dreams have been examined for centuries, their precise function remains poorly understood. An especially compelling and underexplored question concerns how dreams occur in individuals who lack visual input. Existing research indicates that people with blindness do experience dreams, though their content differs from that of sighted individuals. Specifically, individuals who have never perceived light are less likely to report visual imagery in their dreams, whereas those who acquire blindness after reaching a certain level of cognitive and perceptual maturity may retain visual elements based on prior experience (Andrade, 2021). Over time, however, these visual components may diminish, limiting dream imagery to previously encountered scenes. Furthermore, research consistently shows that individuals with blindness often exhibit heightened sensitivity in non-visual senses, such as auditory and tactile processing, due to sensory compensation and neural reorganisation (Andrade, 2021; Ilic et al., 2023; Setareh et al., 2024). These adaptations may significantly influence the sensory composition of dreams.

Investigating dreams in individuals with different visual abilities is therefore of considerable importance to psychological research. Previous findings suggest that dream experiences can influence emotional states and cognitive functioning during waking life, and vice versa (Setareh et al., 2024). Despite this, research examining dreams across varying degrees of visual impairment remains limited. Addressing this gap may contribute to a deeper understanding of sensory processing, neural plasticity, and the broader mechanisms underlying dreaming (Merced, 2012).

Accordingly, the primary objective of this research is to examine the extent to which visual impairment influences dream formation. The study aims to address the following research questions:

1. Do individuals with blindness experience dreams despite the absence of visual input?
2. If so, how do their dream experiences differ from those of individuals with normal vision?
3. Are there differences in dream content between individuals with congenital blindness and those who acquire blindness later in life?

Methodology

The papers selected for this review were compiled through a rigorous and systematic search strategy utilizing online academic databases and extracted into a structured form. Firstly, the search was conducted using several keywords and terms related to the topic such as, "dreaming," "dreams," "mental imagery," "blind individual" and "congenital blindness." Boolean operators (AND, OR) were employed during the search to expand and limit the scope of literatures as needed. While selecting the papers, the year of publication was specified to papers from 2021 to 2024 to ensure current information of the topic.

Inclusion and Exclusion Criteria

Papers included were original research studies and review articles, consisting of participants with sight impairment. The review included papers reporting findings of congenital blindness as well as acquired blindness in relation to how dreams were experienced. Additionally, papers published in non-English mediums, dissertations, theses and unpublished work were excluded from the review.

Data Extraction

Lastly, data was extracted using a standardized form developed specifically for this review. This form allowed for several key findings, including participant information, research outcomes, study design and limitations of research. Following that, the data was synthesized and compared in a meaningful discussion.

Findings

Blindness can occur through two primary pathways: congenital blindness and acquired blindness. Nichols (2023) defines congenital blindness as visual impairment present from birth, which may result from inadequate maternal nutrition during fetal development or inherited conditions such as congenital glaucoma. In contrast, acquired blindness develops later in life and may be caused by traumatic injuries, untreated eye infections such as trachoma, or age-related conditions, including cataracts. Understanding these distinct pathways is essential, as they shape sensory experience differently and have important implications for how individuals with blindness experience dreams.

Building on this distinction, Kang et al. (2023) explored mental imagery in individuals with congenital blindness. As congenitally blind individuals have never experienced sight, they rely predominantly on non-visual sensory information. Data were collected from seven congenitally blind participants who reported their dreams via the Dream Bank online database. Contrary to the researchers' expectations, the findings revealed the presence of visual imagery within participants' dreams. This suggests that the brain may generate visual-like interpretations even in the absence of direct visual input. Similar conclusions have been reported in earlier studies (Andrade, 2021; Setareh et al., 2024), indicating that imagination and auditory input may allow the brain to construct imagery. This phenomenon is closely linked to cross-modal plasticity, whereby the brain adapts to sensory loss by enhancing connections between non-visual sensory areas and the visual cortex, thereby facilitating the formation of visual-like dream imagery.

While Kang et al. (2023) suggest the possibility of visual imagery without visual experience, other research presents a more differentiated view based on the timing of vision loss. Desai (2023) examined how different categories of blind individuals experience dreams, particularly in relation to visual content. Using a cross-sectional interview-based survey of 75 visually impaired participants, the study found that individuals who lost their sight after developing an understanding of light and reaching mental maturity were able to visualise images in their dreams, although these were limited to prior visual experiences. This supports earlier findings that individuals who acquire blindness after the age of seven retain visual elements in dreams (Andrade, 2021). In contrast, congenitally blind individuals or those who lost sight before mental maturity did not report visual imagery, instead describing dreams dominated by sound, touch and taste. These findings suggest that first-hand experience and conceptual understanding of light play a crucial role in the development of visual dream content.

Extending this discussion, Desai's findings align with physiological explanations proposed by Andrade (2021), who suggested that the absence of rapid eye movements during dreams in blind individuals may contribute to the lack of visual imagery. Together, these studies highlight how sensory experience and mental development interact to shape dream content. However, Desai (2023) acknowledged limitations related to sample diversity and generalisability, indicating the need for further research involving broader populations.

Further insight into the qualitative differences in dream content is provided by Setareh et al. (2024), who compared dreams of blind and sighted individuals using established theories of dreaming, including Freud's theory, the continuity hypothesis and the compensation hypothesis. Analysing 135 dreams from 17 blind participants using the Hall and Van de Castle method, the study identified several notable differences between groups. Although blind individuals reported dreaming as frequently as sighted participants, their dream content differed significantly, particularly in terms of sensory emphasis and emotional tone. Consistent with previous studies (Andrade, 2021; Desai, 2023; Kang et al., 2023), the findings suggested that enhanced auditory, tactile and gustatory experiences compensate for the absence of visual input.

In addition, Setareh et al. (2024) found that blind participants reported lower levels of aggression in their dreams, which the continuity hypothesis explains as a reflection of suppressed waking-life experiences. When aggression did occur, it was typically non-physical, potentially reflecting functional limitations associated with blindness. No significant differences were found in bodily misfortunes, suggesting that disability itself does not frequently appear in dream content. Emotional differences were also observed, with blind women reporting higher levels of happiness and blind men reporting greater apprehension, possibly related to concerns about fulfilling responsibilities in waking life. Although Setareh et al. suggested that visual deprivation may increase nightmares, this finding was partially contradicted by Andrade (2021) and Meaidi et al. (2014), who reported higher rates of nightmares and sleep disturbances among congenitally blind individuals. These conflicting findings indicate that emotional responses in dreams may vary depending on both individual experience and degree of sensory deprivation.

Complementing these findings, Ilic et al. (2023) focused specifically on how congenitally and early blind individuals construct dreams and mental imagery without visual input. Their study demonstrated that dreams in blind individuals are primarily formed through non-visual sensory modalities, such as touch, sound and smell, reflecting the brain's adaptive capacity through cross-modal plasticity, particularly within the occipital cortex. While congenitally blind individuals typically described non-visual dream experiences, some reported abstract or metaphorical visual impressions. In contrast, individuals who became blind later in life reported more visually oriented dreams, particularly if vision loss occurred after the age of seven. These findings further support the role of prior visual experience in shaping dream imagery.

Finally, Meaidi et al. (2014) provided a direct comparison of dream content across congenitally blind, late blind and sighted control participants. Over a four-week observational period, participants completed questionnaires assessing dream content, sensory imagery, sleep quality and psychological wellbeing. Consistent with earlier research, sighted participants reported significantly more visual imagery in their dreams. Congenitally blind individuals relied more

heavily on auditory, olfactory, gustatory and tactile sensations, while late blind participants predominantly reported tactile dream experiences. Collectively, these findings reinforce the conclusion that dream content is closely shaped by sensory experience, the timing of vision loss and the brain's capacity for adaptive reorganisation.

Thematic Summary

Physiological Process

First, neural activity in the brainstem, more specifically the pons, will send signals to the lateral geniculate nucleus and visual cortex. Both areas will make sense of the signals sent by the pons, thus forming our dreams. The rapid eye movement (REM) phase of sleep is when dreaming and delta waves occur. During REM sleep, we have faster breathing, increased brain activity and relaxation of muscles. People with functional eyesight can see their dreams because they perceive light. However, this is not the case for congenitally blind people. Since they have never perceived light, they are unable to see in their dreams. On the other hand, people who have eyesight problems later in life are still able to perceive dreams because they have perceived light before. Their dreams conjure things they have seen from their memories (Tsunematsu, 2023).

Second, blind people can describe their dreams with detail as they have a larger hippocampal area which compensates for their lack of visual significance, as cited by Setareh et al. (2024). They can remember their dreams in greater detail than sighted people. Also, since they have lost one of their senses, their other senses are heightened. They are able to know the details of dreams through tactile or auditory senses (Andrade, 2021). This is to compensate for the lack of visual stimuli. Interestingly, partially blind people or people who develop blindness throughout their life are able to match certain things they remember in their dreams such as color or brightness to things in their waking experience. This supports the argument that the mind conjures things from memories to be put in dreams. Andrade (2021) also argues that blind people do not have REM in their sleep because they do not use the nervous pathways involved in the execution of blind eye movements. Hence, they are unable to construct visual images in their dreams.

Furthermore, according to Vitali et al. (2022), the frontoparietal brain regions play an indispensable role for blind people to retrieve their dreams. This supports the global workspace theory of consciousness in which different brain regions are involved to integrate various sensory inputs, as well as maintain the dream experience. Moreover, different frequencies of waves produce different contents in dreams. Additionally, alpha-theta waves activity increases during REM sleep causing more emotional and story-like dreams.

Psychodynamic Theory

According to Freud's psychodynamic theory, dream refers to reflection of one's unconscious desires and feelings, containing both manifest symbols (obvious meanings) and latent symbols (hidden meaning). The formation of dreams is influenced by random neural signals in the brain, which the mind organizes into coherent narratives, often guided by emotions that help integrate past experiences with current events. For instance, dreams experienced by congenitally blind people are likely to be heavily influenced by daily emotional experience and anxieties (Desai, 2023). This in turn could result in increased frequency of experiencing nightmares compared to sighted ones (Meaidi et al., 2014). Freud's theory suggests these nightmares are forms of

projections of internal conflicts and anxieties by these blind people. In other words, emotions and dreams are indispensable, highlighting that emotions control and guide combinations of dream elements. This is aligned with the argument that dreams serve as an outlet for repressed emotions and thoughts (Malinowski, 2015).

Moreover, blind people, as mentioned before, can describe their dreams in detail despite having minimal to no visual imagery in their dreams. This is due to the experience of rich somatosensory content through tactile and auditory sensation. As such, they can still feel anxiety in their dreams if they feel like falling or in danger. On top of that, they also are able to experience positive emotions in dreams, like when eating something delicious. Dreams dominated by anxiety can result in negative moods upon waking, whereas dreams involving enjoyment tend to lead to more positive moods (Mallett et al., 2021). In light of Freud's notion of dreams, tactile sensations from dreams could symbolize deep-seated needs or represent coping mechanisms for real-life stressors. For example, gentle, warm tactile sensations, like a hug, may signify a deep need for comfort and emotional security. Given that blind people may face difficulty like social isolation, it could reflect a longing for physical and emotional closeness.

Discussion

Application

The empirical findings reviewed in this study consistently demonstrate that individuals with blindness rely predominantly on non-visual sensory modalities, particularly tactile and auditory input, as a result of sensory compensation and neural adaptation (Kang et al., 2023; Ilic et al., 2023; Setareh et al., 2024). Research on cross-modal plasticity shows that, in the absence of visual input, the brain enhances processing in other sensory systems, enabling effective learning and information integration (Andrade, 2021; Ilic et al., 2023). These findings have direct implications for the development of assistive tools and inclusive educational practices. For example, the provision of textbooks in Braille directly supports the dominance of tactile processing observed in congenitally and early blind individuals (Desai, 2023; Meaidi et al., 2014). As earlier findings indicate that tactile input is central to cognitive representation and memory formation in blindness, Braille materials allow students to engage independently with learning content without reliance on continuous verbal instruction (Kang et al., 2023). This aligns with evidence that tactile exploration plays a critical role in concept formation when visual imagery is absent (Ilic et al., 2023).

Similarly, tactile anatomical models, such as the brain model developed by Diniz and Sita (2019), reflect principles of sensory substitution and cross-modal plasticity. Their study demonstrated that blind students could learn complex neuroanatomical structures through guided touch, with performance outcomes comparable to sighted peers (Diniz & Sita, 2019). The success of this approach can be directly linked to earlier empirical findings showing enhanced somatosensory processing and functional reorganisation of the occipital cortex in blind individuals (Andrade, 2021; Ilic et al., 2023). By engaging the tactile system, such models compensate for the lack of visual input while supporting spatial understanding and memory.

In addition, the use of speech-to-text software during assessments capitalises on the heightened auditory processing observed in blind individuals (Setareh et al., 2024). Earlier research highlighted the auditory system's increased role in information encoding and retrieval among

blind populations (Kang et al., 2023; Ilic et al., 2023). Speech-based input therefore reduces cognitive and physical barriers during examinations, allowing students to demonstrate knowledge more effectively. Collectively, these applications illustrate how empirical findings on sensory dominance and neural plasticity can inform the design of inclusive educational technologies that promote equity and participation.

The Islamic Perspective

Blindness, Coping, and Psychological Resilience

Within Islamic thought, disability, including blindness, is understood within a broader ethical and spiritual framework that emphasises patience (sabr), trust in Allah (tawakkul), and moral responsibility (amanah) (Green, 2003). Rather than framing disability as a deficit, Islamic teachings present it as a condition that carries meaning and purpose, encouraging adaptive coping and psychological resilience (Rabbani, 2012). This perspective aligns with psychological research suggesting that meaning-making, acceptance, and spiritual coping can buffer stress and enhance wellbeing in individuals facing physical challenges (Andrade, 2021). Prophetic traditions recorded in Sahih al-Bukhari describe blindness as a test that may lead to spiritual reward when met with patience (Al-Bukhari). From a psychological standpoint, sabr may be interpreted as a form of adaptive coping that promotes emotional regulation and long-term resilience (Green, 2003). Similarly, tawakkul, or reliance on Allah, may function as a cognitive framework that reduces anxiety by fostering acceptance of circumstances beyond individual control, a process comparable to acceptance-based coping strategies discussed in psychological literature (Andrade, 2021).

The Qur'anic account involving Abdullah ibn Umm Maktum further reinforces the ethical principle of social inclusion and dignity for individuals with disabilities (Qur'an, Surah 'Abasa 80:1–3). Rather than merely serving as a moral narrative, this account highlights the social dimension of disability, underscoring the responsibility of communities to ensure equal participation and respect. When viewed alongside empirical findings on inclusion and assistive technologies, Islamic ethics provide a complementary framework that supports both psychological wellbeing and social integration for individuals with blindness (Desai, 2023).

Dreams in Islam and Sensory Experience

Islamic scholarship classifies dreams into three categories: righteous dreams (ru'ya salihah), distressing dreams attributed to Satan (hulm), and dreams arising from the self (nafs) (Green, 2003). From a theological perspective, righteous dreams are considered a possible means of divine communication, while dreams from the nafs reflect an individual's emotional and cognitive preoccupations. These classifications offer a structured framework for understanding dream content without conflating spiritual meaning with empirical explanation.

Importantly, claims within Islamic tradition that individuals, including those who are congenitally blind, may experience visions of prophets or the afterlife in dreams should be understood as theological interpretations rather than neuroscientific assertions (Rabbani, 2012). From an empirical standpoint, research on dreams in blindness suggests that dream imagery is shaped by sensory experience, neural plasticity, and compensatory mechanisms (Kang et al., 2023; Setareh et al., 2024). Islamic perspectives, by contrast, attribute such experiences to divine agency, which operates beyond sensory and biological constraints.

Maintaining this distinction avoids epistemological confusion while allowing both perspectives to coexist within their respective explanatory domains.

Nevertheless, a point of conceptual convergence lies in the recognition that dreams reflect the limits of human perception and understanding. While neuroscience emphasises sensory input and cortical reorganisation in shaping dream content (Ilic et al., 2023; Andrade, 2021), Islamic thought highlights divine wisdom and human epistemic limitation (Green, 2003). Dreams originating from the nafs, in particular, parallel psychological interpretations of dreams as reflections of waking concerns, anxieties, and emotional states (Desai, 2023), thereby offering a bridge between religious and psychological frameworks.

Conclusion

This study demonstrates that dreams in individuals with blindness are shaped by sensory compensation, neural plasticity, and the timing of vision loss, with tactile and auditory modalities playing a central role (Kang et al., 2023; Ilic et al., 2023; Setareh et al., 2024). These empirical findings have clear practical implications, particularly in the design of assistive educational tools that align with dominant sensory processing in blind individuals. Braille materials, tactile learning models, and speech-based technologies exemplify how neuroscientific insights can be translated into inclusive practice (Diniz & Sita, 2019; Meaidi et al., 2014).

From an Islamic perspective, concepts such as sabr, tawakkul, and amanah provide an ethical and psychological framework that complements empirical understandings of adaptation and resilience (Green, 2003; Rabbani, 2012). While Islamic interpretations of dreams and disability operate within a theological domain distinct from neuroscience, they offer valuable insights into coping, meaning-making, and social responsibility. Integrating empirical research with ethical and spiritual perspectives allows for a more holistic understanding of blindness, one that acknowledges both neural adaptation and the broader human experience.

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