



Review

Did Prophet Mohammad (PBUH) have epilepsy? A neurological analysis

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ABSTRACT

Introduction: The Prophet of Islam is one of the several famous religious figures who allegedly suffered from epilepsy. Early Greek chronicler Theophanes was one of the first to mention that the revelations of The Prophet were episodes of epilepsy, sparking a debate that has continued to date. This argument, for the most part, was confined to historic literary writings only until it was quoted by some eminent neurologists of recent times. They suggested probable diagnosis of temporal lobe epilepsy, adding credibility to the historical claims.

Material and method: Review of works of some prominent historians, orientalist, literati from previous twelve centuries, and recent neurologists who believed The Prophet to be epileptic was done. The resource material that influenced them to believe this was likewise examined. Other archived literature including *Hadith*, the primary resource material that provides detailed information about the day-to-day happenings in The Prophet's life with books on the life of The Prophet by orientalist and Muslim historians describing such features during revelations and other events, was scrutinized. Documentations of these events from all resources were compared and analyzed from a neurological perspective.

Results: The author on analysis found literature indicating faulty translations of the original Arabic text into Latin as one of the reason for misleading conclusions. Verbatim translations of Arabic phrases used symbolically have taken away the exact construal giving it a wrong perspective. Similarly, The Prophet's peri-revelation episodes as they appear in *Hadith* when evaluated from a neurological perspective suggest that The Prophet did not have epilepsy.

Conclusion: A judicious analysis of the features on which the historians and literati based their suspicion to label The Prophet epileptic, provides little supportive evidence when analyzed from a neurological perspective. Without judicious analysis of clinical data chances of misdiagnosis tend to be fairly high.

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1. Introduction

Many well-known religious leaders have been labeled epileptic, including Apostle St. Paul, Apostle St. John, Joan of Arc, and Lord Buddha. Prophet Mohammad (PBUH)¹ was also considered epileptic during the Byzantine Period, about 200 years after his death. This subject of great theological and philosophical significance initiated a literary debate on The Prophet's¹ epilepsy and the validity of his prophet-hood, remaining confined to historical and literary circles for a long time. In the

last century, the belief that The Prophet¹ suffered from epilepsy also started appearing in published medical literature [1–3]. In the present era, cyber libraries provide easy access to all types of information, authentic to superfluous. The general public usually is incapable to sieve them out and tend to believe in whatever they read.

Historical assertions about The Prophet's¹ epilepsy appear in several historical texts. Temkin, in his book *The Falling Sickness*, illustrates in detail how the Greek historians, followed by others, perpetrated the notion that The Prophet¹ had epilepsy. Theophanes was probably the first to postulate that The Prophet¹ had epilepsy [4] followed by Prideaux, Gustav Weil, Sir William Muir, and the likes who not only claimed that Mohammad¹ suffered from epilepsy but that he faked his epileptic events as revelations [4–6]. Neurologists like Lennox and Freeman on the basis of past orientalist affirmed the same and going on to classify the epilepsy type. However, Gibbon, Carlyle, Watt, and others refuted this claim [7–9].

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¹ "Peace Be Upon Him – PBUH," the reverential title, is, according to Islamic tradition, given to all monotheistic prophets such as Abraham, Moses, Jesus, and Mohammad. For concise presentation, the title is not being written repetitively with The Prophet's name in this paper. This article spells The Prophet's name as Mohammad. This name is spelt differently by others.

In this article, all earlier historical and literary debates, original *Hadith*² texts, and other historical literature on the subject were reviewed and analyzed from a neurological perspective to determine whether The Prophet¹ had epilepsy or not. There appears to be no previous record of similar analysis on this topic.

2. Resource material and methodology

This article reviews historical documentations pertaining to The Prophet's¹ life as it appears in the voluminous *Hadith* and other archived historical literature and compared with the writings of historians, orientalist, philosophers, literati, and critics in the subsequent twelve centuries who claimed that The Prophet¹ had epilepsy. Most data exist in the form of opinions preserved in published books. Analysis of works of neurologists in the last century, who also quite believed that The Prophet¹ had epilepsy, was also done. All suspicious events labeled epilepsy were evaluated from a neurological perspective. The books and historical chronicles reviewed were retrieved from various web libraries while some belong to the author's personal library.

3. Discussion

Opinions of orientalist, historians, and chronologists regarding The Prophet's¹ spiritual years and revelations in nonscientific literature appear to be polemical, defamatory, and biased. The earliest historians and chronologists were heavily influenced by the then prevalent highly charged religiopolitical environment. The general perceptions then of those affected with epilepsy was of a tainted, incurable victim possessed by an evil spirit or devil, and the claim to Mohammad's¹ epilepsy was probably in response to this situation to slander him as a false prophet. Men of letters from the subsequent eras picked up these early narrations and quoted them per se without any verification, further substantiating these nonscientific works as the truth. Based on these narrations even neurologists of repute have assumed epilepsy, of temporal lobe origin.

3.1. *Epilepsy and The Prophet¹: historical claims and rebuttals*

Temkin, in his book *The Falling Sickness* identifies an 8th century Byzantine monk and chronicler, Theophanes to be the first to attribute epileptic seizures to The Prophet Mohammad¹, about 200 years after his death [4]. In *The Chronicles of Theophanes*, he addresses Mohammad¹ as a false prophet who though belonged to a noble tribe was a helpless orphan [12]. He describes him as an opportunist who used the knowledge gained from the Jews and Christian while on trade trips with his

uncle, to his advantage. Theophanes states but without providing any reference to his claim:

He had an epileptic seizure, and when his wife noticed this she became very distressed, for she was noble and had now been joined to a man who was not only helpless but epileptic as well. He turned to conciliating her, saying, "I see a vision of the angel known as Gabriel, and faint and fall because I cannot bear up under the sight of him." Khadija consulted an exiled monk who confirmed, "He has spoken the truth, for this angel is sent to all prophets." [12]

Theophanes' narration was accepted by western historians, theologians, and physicians, as according to Temkin, it had all the characteristics of "religious and political propaganda" [4]. In reality, The Prophet¹, though an orphan, belonged to a respectable tribe. He was raised by his paternal uncle who was a businessman and also the chieftain of the tribe. His wife, Khadija, a 40-years-old wealthy widow from Mecca had proposed marriage to 25-years-old Mohammad¹, a marriage that lasted monogamously for 25 years, until her death [13,14].

Humphrey Prideaux, an English orientalist, Dean of Norwich, and Archdeacon of Suffolk citing Hottinger (Swiss philologist and theologian), John Zonaras (Byzantine chronicler and theologian), and others claimed that The Prophet¹ was an imposture who feigned his fit as being in trance during which the Archangel Gabriel visited him bringing God's revelations. According to Prideaux, every fit was pretended to be a trance bringing in an original revelation that he put them as Chapters to compile the Quran and used his epilepsy to his advantage [5]. According to Temkin, Gustav Weil, a German orientalist who was originally destined for the rabbinate compiled the life of Mohammad¹ and was probably the first to probe into the oldest accessible traditional biographical resource material, which he made the basis to infer that the The Prophet¹ had epilepsy [4]. Margoliouth, an English orientalist and an active priest in the Church of England claimed that Mohammad¹ suffered from epilepsy and faked his epileptic events as revelations, which could artificially be reproduced [15]. Prideaux, Weil, and Margoliouth all had a strong religious background, and their opinions appear to be part of the then ongoing religiopolitical slander against The Prophet¹ of Islam.

Sir William Muir, a Scottish orientalist and colonial administrator, changed the orthography of The Prophet's¹ Arabic proper name Mohammed¹ to Mahomet, "following the established usage of Christendom." In his book *Life of Mahomet*, Muir interpreted an episode occurring in The Prophet's¹ childhood as epilepsy, influencing several later historians and neurologists to believe so. Hence, it becomes important to discuss this episode in detail here. Muir's inference was based on Wakedi's biography of The Prophet¹, *Katib al Wakedi* in which he relates an incident when Mohammad¹ was 4 years of age. He was playing with his foster siblings near the encampment one morning when "two angels came who cut open his body and drew forth from thence the black drop, and cast it from them, and washed his inside with water of snow from a golden platter." His foster brother on seeing, ran screaming to his mother, wet-nurse Halima, whose husband also happened to be there. They hurried to the spot to find the four-year-old standing, looking pale, and frightened. On the husband's insistence, Halima took the child to his mother, Amenah, who calmed Halima and resent the child with her. A year later some fresh symptoms of suspicious nature reported as "a cloud attendant upon the child, sheltering him from the sun, moving as he moved, and stopping when he stopped" made Halima uneasy and finally handed over Mohammad¹ to his mother at the age of 5 years. Muir further adds Hishami's comment by Halima's husband that the child had "had a fit – أميب (omeeb) and advised his wife to return Mohammad¹ to his mother [6].

The sequence of events in the narration of the opening of chest incident by different historians like Al-Wakidi, Ibn Sa'd, Ibn Ishaque, Al-Tabari, and others have some differences. There are two main differences to be noted. First, according to Wakedi, this event was witnessed

² The *Hadith* is the literature that documents the sayings of The Prophet¹ and provides account of his detailed day-to-day happenings in his life compiled by *Hadith* collectors like Bukhari, Muslim, Tirmizi, etc. *Hadith* literature in The Prophet's¹ era was partly written and partly memorized; however, within the following century most was converted into written form. It was much later that this text in old Arabic was translated into other languages. Globally all historical records are liable to be probed for their reliability, with some becoming debatable for a good reason because unless subjected to scrutiny, they may continue to mislead if wrong. The twelve-hundred-year-old *Hadith* compilation is no exception; however, the linkage system, *Isnad* [10] associated with it, gives it more credibility. In *Isnad*, the names of narrators, starting from the initial witness, serially to the last narrator are recorded. Hence every hadith carries a list of names of its linkage before the event is described. Additionally, each Hadith is evaluated by a grading system that assigns its reliability; from being the most to the least reliable. Hence in all published collections of *Hadith*, every *Hadith* carries its assigned grade. Alloys Sprenger, a reputed orientalist in his forward to the edited version of Ibn Hajar's book, *A biographical dictionary of persons who knew Mohammad*, mentions about the scholars of the Traditions (*Hadith*) and states: "The glory of the literature of the Mohammedans is its literary biography. There is no nation, nor has there been any which like them has during twelve centuries recorded the life of every man of letters. If the biographical records of the Musalmans were collected, we should probably have accounts of the lives of half a million of distinguished persons, and it would be found that there is no decennium of their history, nor a place of importance which has not its representatives" [11].

and related to Halima and spouse by Mohammad's¹ foster sib, while some historians like Tabari mention that child Mohammad¹ himself narrated the happening. Tabari also mentions The Prophet¹ to have related this event in adulthood to an inquirer [16]. The second important difference is the interpretation of Halima's husband's remark. Muir's on the authority of Hishami claims that it was probably a fit of epilepsy while Tabari called it a malady [16]; Ibn Ishaq labeled it as stroke [17], and Sprenger as hysteria [4]. From neurological or any other perspective, this episode extraordinaire of a child surviving splitting open of his chest/belly to be closed within minutes and later relating the details himself or witnessed by his foster sib is probably paranormal and cannot be accepted as epilepsy or any human happening.

Lennox, an American neurologist, in the chapter titled *Epileptics of Worth and Fame* in his book *Epilepsy and Related Disorders* deduces on the basis of some hallucinatory auras that The Prophet¹ probably had temporal lobe epilepsy. He writes, "About Mohammed (569–632), Sir William Moore's (Muir) *Life of Mohammed* (Mahomet) says two periods of loss of consciousness at the age of 2 caused the child's nurse to leave her employment." Muir relates a single episode of opening of the chest at age 4 years (vide supra) while Lennox mentions two episodes at age two. It is surprising that an eminent neurologist of Lennox's caliber accepted split opening of the chest/belly in a child aged 4 years, in midst of a desert by two unknown men, searching for something inside the body followed by washing and closing of the opened part as epilepsy. This painless procedure of a minute or less with the child being conscious enough to relate the entire episode to his foster parents has no features typical to epilepsy. Also Muir and likes who mention this episode to have been witnessed by his foster sib substantiate that it was not Mohammad's¹ epileptic hallucination. Lennox's contention of two fits can be related to Muir's uncertainty about the second suspicious vague event that he mentions in a footnote stating it to be not convincing to be considered epileptic. However, he goes on to write in the text: "If we are right in regarding the attacks which alarmed Halima (wet-nurse) as fits of a nervous or epileptic nature..." changing the plurality from single to multiple fits [3]. Though unlikely, the possibility of Lennox having read the text only, omitting reading the footnotes with more details can be considered.

Lennox's statement of the wet-nurse losing her job is not only untrue but also contrary to historical facts. The wet-nurse Halima took the 2-year-old child Prophet¹ back to his mother Amenah, as per cultural norms. Amenah was delighted to see him healthy and robust and asked Halima to take away the child and continue nursing him away from Mecca to prevent him from locally prevalent infectious diseases. Halima, thus, continued to take care of him for the next 3 years despite the opening of chest episode. Thus, the child remained under care of Halima for about 5 years negating Lennox's claim that she had to leave her employment after 2 years.

Lennox also quotes Matthew Woods: "Mohammad was slightly hydrocephalic; seizures started after the age of three which persisted throughout life". Woods' book *In Spite of Epilepsy* is a historical review without any citations. Moreover, his comments of being "somewhat hydrocephalic" cannot be accepted as it was not substantiated with physical examination [18].

Freemon, an American neurologist, has an article on this topic that was probably the first to get published in a scientific journal in which he concludes that "if one were forced to make a medical diagnosis, psychomotor seizures of temporal lobe epilepsy would be the most tenable explanation, although historical knowledge of Muhammad's life and scientific knowledge of brain function during altered states of consciousness do not permit unequivocal diagnosis." [1]. Freemon based his conclusions from information obtained from a historical resource *Tabqat-al-Kabir* by Ibn Sa'd, which to Freemon appears as the best description recorded. He quotes Ibn Sa'd:

At the moment of inspiration, anxiety pressed upon the Prophet and his countenance was troubled. He fell to the ground like an inebriate

or one overcome by sleep. On the coldest day his forehead would be bedewed with large drops of perspiration.... To outward appearance inspiration descended unexpectedly, without any previous warning to the Prophet. When questioned on the subject he replied: "Inspiration cometh in one of two ways; sometimes Gabriel communicateth the Revelation to me, as one man to another and this is easy; at other times it is like the ringing of a bell, penetrating my very heart, and rending me.

Freemon does not cite the above quote nor does he provide reference of any other comparative resource material to substantiate his claim of Ibn Sa'd's description to be the best.

The author confirms that Ibn Sa'd has devoted a full chapter of *Tabqat-al-Kabir* dedicated to symptoms associated with revelations and comprises seven such episodes [19]. It appears that Freemon has chosen parts of a number of different episodes and merged the symptoms in a brief single paragraph, which to the reader may appear as one event. These episodes are being discussed here at length as peri-revelations episodes (PREs) (vide infra). "He fell to the ground like an inebriate ..." appears to be an addendum by Freemon as it does not appear Ibn Sa'd's original text. Also neurologically, a fall of a drunk or sleepy person is different from a fall due to epilepsy; the former is more of a "syncopal fall" while the latter is marked mostly by hypertonicity and rarely due to instantaneous complete loss of tone as in atonic seizures.

English historian Edward Gibbon rejected the harsh statements of Theophanes and his Greek supporters stating, "His epileptic fits, an absurd calumny of the Greeks, would be an object of pity rather than abhorrence" [7]. Thomas Carlyle similarly rejected such claims, presenting The Prophet¹ as a hero and stating that, "The lies, which well-meaning zeal has heaped round this man, are disgraceful to ourselves only." [8]. William Montgomery Watt also contradicted these claims, stating the following:

On some occasions at least, there were some physical accompaniments. He would be gripped by a feeling of pain, and in his ears, there would be a noise like the reverberation of a bell. Even on a very cold day the bystanders would see great pearls of sweat on his forehead as the revelation descended upon him. Such accounts led some Western critics to suggest that he had epilepsy, but there are no real grounds for such a view. Epilepsy leads to physical and mental degeneration, and there are no signs of that in Muhammad; on the contrary, he was in full possession of his faculties to the very end of life [9].

John Davenport a seventeenth century English Puritan clergyman states also refutes by stating:

The assertion, so often repeated that Mohammed was subject to epileptic fits, is a base invention of the Greeks, who would seem to impute that the morbid affection of the apostle of a novel creed as a stain upon his moral character deserving the reprobation and abhorrence of the Christian world. Surely those malignant bigots might have reflected that if Mohammed had really been afflicted with the dreadful malady Christian charity ought to have commanded them to pity his misfortune rather than rejoice over it or affect to regard it in the light of a sign of Divine wrath [20].

Owsei Temkin, a medical historian and linguist with knowledge of seven languages including English, Arabic, Greek, Latin, and Hebrew in his book *The Falling Sickness*, after reviewing works of noted orientalists, historians, and chronicler summarizes the following:

As is to be expected, the positive bias of Islam was countered by an opposite bias in the Christian world. As to the origin of the diagnosis 'epilepsy', everything points to Christian Byzantium, an empire that was not only hostile to Islam but at frequent wars with the Arabs.

Less than 200 years after Mohammed's death, the Byzantine historian Theophanes (died about 817) told a story which was bound to make Mohammed appear a fraud and to discredit the belief in his divine mission.

Temkin further adds, "This is the story which was accepted by western historian, theologians, and physician. The story has all the earmarks of religious and political propaganda. Hence, repudiated by Gibbon as an absurd calumny of the Greeks" [4].

3.2. History confounded by inaccurate erroneous translations

History is confounded by imprecise and flawed translations of the *Hadith* and literature quoting the *Hadith*. The *Hadith*, written in old Arabic was initially translated into Latin and much later into other European languages including English. Sir Syed Ahmed Khan, a scholar of Arabic language, undertook the tedious work of validating some of these translations. He identified inaccuracies in translations and misinterpretations by orientalists like Muir, Prideaux, Pococke, and others, which on rectification would change the entire historical perspective of the subject [21].

According to Khan, Sir William Muir in his book *Life of Mahomet* with reference to "opening of the chest" event writes, "It was probably a fit of epilepsy...." In the footnote on the same page Muir cites two quotations; one of Al Wackidi on "opening of the chest" and the other of Hishami, on its interpretation by the foster-father. Muir's narration about "opening of the chest" has been discussed in detail above. Muir writes "Hishami and other later writers add that her (Halima's) husband concluded that he had a fit, *omeeb* (أُمِيْب) and advised her (Halima) to take him to his mother". Khan observed that *omeeb* was not part of Arabic lexicon and had no meaning. He reviewed Hishami's book printed and published at Göttingen in 1858, under expert supervision of Dr. Ferdinand Wüstenfeld and established the error. Hishami had used the word *oseeb* (أُصِيْب) and not *omeeb* (أُمِيْب) that in Arabic language is used with extensive connotations, synonymous to the English phrase "what in the world" used as an enigmatic expression of dismay or caught, afflicted, and others. These two words when written in Arabic script look similar and may have been the reason for Muir's error. When Khan pointed out this error to Muir, the latter removed the footnote in the following editions but did not rectify the text thus maintaining his stand.

Despite Khan having ascertained the typographical error, he was still not content as *oseeb* did not mean epilepsy. Pursuing his research, Khan established that Prideaux's claim of The Prophet¹ having epilepsy was based on his per se translation of the Latin version of Abulfeda's work into English. Dr. Edward Pococke, a canon of Christ Church, Professor of Hebrew and Arabic had translated Abulfeda's original works in Arabic to Latin.

Khan demonstrated Pococke's work was flawed and led to change in inference of the account. He first translated Abulfeda's original Arabic text into English and then compared it with the English translation of Pococke's Latin version. Khan confirmed that the Arabic word *oseeb* (أُصِيْب), meaning contracted or caught in English, was correctly translated into Latin as *contraxerit*. However, when Pococke realized that he could not complete the sentence grammatically and logically as to what had been caught, he artfully added "hypochondriacal." The mindful addition of this single word by Pococke only to complete his Latin sentence logically changed the meaning of the entire original narration. Khan, thus, concluded that Pococke was responsible for the conscious addition of a term not appearing in the original Arabic text and Prideaux for translating the Latin works to English without verifying the authenticity of the translated text.

3.3. Epilepsy and The Prophet¹: Arab history

There is no mention of epilepsy by famous Arab historians like Tabari [16], Ibn Ishaq [17], or Ibn Sa'd [19] nor have they used words like fits, epilepsy, epileptic, falling sickness, or *sara'a* in their chapters on the life of The Prophet¹. It would also be onerous to assume that Arabia had no physicians during The Prophet's¹ era and as a result, his epilepsy went unnoticed. Freemon upholds this by stating that "Arab physicians were familiar with the manifestations of epilepsy and none of his contemporary opponents have mentioned this possibility" [1]. Epilepsy was known among Arabs as *sara'a*, a term still in use. An example is a *Hadith*, given below, that describes a person with epilepsy coming to The Prophet¹, supporting that epilepsy was common knowledge at the time.

Ibn Abbas said to me, "Shall I show you a woman of the people of Paradise?" I said, "Yes." He said, "This black lady came to the Prophet and said, 'I get attacks of epilepsy and my body becomes uncovered; please invoke Allah for me.' The Prophet said (to her), 'If you wish, be patient and you will have (enter) Paradise; and if you wish, I will invoke Allah to cure you.' She said, 'I will remain patient,' and added, 'but I become uncovered, so please invoke Allah for me that I may not become uncovered.' So he invoked Allah for her." [22]

3.4. The Prophet's¹ peri-revelation episodes as recorded in *Hadith*

Before neurological assessment of signs and symptoms that occurred around the divine revelations to The Prophet¹ and were labeled epilepsy by western orientalists, historians, and neurologists, we reiterate the scientific definition of epilepsy. According to the revised International League Against Epilepsy (ILAE) operational clinical definition (2014), epilepsy is a disease of the brain defined as two unprovoked seizures occurring more than 24 h apart or on diagnosis of an epilepsy syndrome or a single unprovoked seizure with a high risk of further seizures. The resource materials used for this article are 1200-year-old historical recordings, and only one of the 3 states in the definition, i.e., two unprovoked seizures, more than 24 h apart is applicable [23].

Epileptic attacks are stereotyped, lasting from a few seconds to 2–3 min. Epileptic visual hallucinations are mostly ill-formed, lasting for a split-second, without sound, verbal content or two-way communication. In *déjà vu*, the images are usually still without any sound. Auditory hallucinations are machine-like, buzzing or whistling sounds without verbal content. There is nearly total amnesia of all ictal events in epilepsy; except in aura in which there may be full or partial retention of memory. These events are usually followed by varying periods of sleep and/or blunted mentation, which distorts memory and its context; hence, events recounted during or after the events, if any, are unreliable.

An epileptic attack can be induced by physical or chemical changes or stimulation but cannot be induced by volition, suggestion, or hypnosis.

What the orientalists and historians labeled as epilepsy, consciously or because of lack of understanding, were in fact signs and symptoms of discomfort endured by The Prophet¹ during divine to human transfer of revelations and not epilepsy. The author has tried to prove this through neurological analysis of signs and symptoms occurring just before, during, and after a revelation and for easy reading labeled as PREs.

Certain phenomena like fear, sweating, fainting, trembling, etc. associated with revelations have baffled most scholars resulting in attribution of such revelations as epilepsy. Muslim scholar Ibn Khaldūn proposed an explanation of such phenomena in his book, *The Muqaddimah*, writing, "Above the human world there is a spiritual world" and that "the human soul must be prepared to exchange humanity for angelicity, in order actually to become part of the angelic species at any time, in a single instant. It will afterwards resume its

humanity" [24]. Revelations have been reported in *Hadith* to be complex, difficult, and painful, as described in PREs 1 and 5 below, a fact that has been substantiated by Armstrong as well [14]. Signs and symptoms occurring in each PRE was experienced by The Prophet¹ himself and, on some occasions also observed by his companions. The Prophet's¹ own narration and that of his companions about these episodes are documented in the *Hadith*. A few examples from the extensive *Hadith* texts are given below to highlight the variability of phenomenology associated with PREs.

PRE-1: In 610 C.E., Mohammad¹ was 40 years old when he received the first revelation through an angel who said, "*Iqra*" (read). To this he replied, "I cannot read," as he was illiterate. The angel embraced him until he could no longer endure it and, after releasing him, repeated, "*Iqra*." Mohammad¹ replied as before. This dialogue was repeated twice, and during its last repetition, the angel asked Mohammad¹ to repeat after him, "Read in the name of your Lord, who has created (all that exists), created man from a clot. Read! And your Lord is the Most Generous." [25] Mohammad¹ was terrified by the entire experience and fled home. Tired and frightened, he asked his wife to cover him. After his awe abated, he shared the experience with his wife, Khadijah by recalling the entire communication with the angel and his fears. She soothed him and later consulted her cousin, Waraqa, an old pious man with knowledge of previous revelations and scriptures. Waraqa confirmed that Mohammad¹ had been visited by Archangel Gabriel who had also visited Moses [25]. It needs to be noted that Mohammad¹ was fully conscious throughout this entire episode. **PRE-2:** The Prophet¹ said, "At times it comes to me like the ringing of a bell, and that is most severe for me, and, when it is over, I retain that (what I had received in the form of *wahy*/revelation), and, at times, an angel in the form of a human being comes to me (and speaks), and I retain whatever he speaks." [26] **PRE-3:** The Prophet's¹ wife Ayesha witnessed "his forehead was dripping-wet despite the chilly weather." [27] **PRE-4:** "Ubida b. Samit reported that when *wahi* (inspiration) descended upon Allah's Messenger¹, he felt a burden on that account and the colour of his face underwent a change." [28] **PRE-5:** It was reported, "On occasion, so much intensity was generated in this state of *wahy* that the animal he was riding at that time would sit down, crushed under his weight" [25]. One time, The Prophet¹ was resting his head on the lap of a companion when a revelation came in that position. The experience of a revelation put so much weight on the companion's thigh that it seemed to break [29]. **PRE-6:** Omar stated, "When a *wahy* came to him, a sound somewhat similar to the buzzing of honeybees could be heard close to his most bright face." [29] **PRE-7:** It is stated that, at times, Gabriel would come with the revelation in angelic form. Once when he appeared in an angelic form The Prophet¹ wished him to appear in his real form. This was again repeated during The Prophet's¹ heavenly journey [29]. **PRE-8:** It is written that "... [Gabriel] would let some words of the message fall into his heart." that appeared more like "a blowing into the heart." [29] **PRE-9:** According to Abu Huraira, "Whenever Mohammad¹ received a revelation, he was overwhelmed by trembling." [30] **PRE-10:** An account remarks, "He became distressed, foaming at the mouth and closing his eyes. At times, he snorted like a young camel." [30]

3.5. Neurological analysis of peri-revelation events

The 10 PREs are being grouped into four types based on similar phenomenology.

Group 1 (symptoms of predominantly phobic states): PREs 1, 3, 4, and 9 indicate a state of fear of the unknown, a state which causes emotional changes and autonomic dysfunction such as anxiety, palpitations, sweating, trembling, and syncope-like symptoms. Similar incidents of

fear are recorded in the *Torah*, such as when God spoke to Moses from within a burning bush. Moses was so frightened that he hid his face [31]. The *Quran* reports the same incident, stating that Moses crumbled and fell down when he heard The Voice [32].

Group 2 (subjective visual/auditory hallucinatory symptoms): PREs 1, 2, 4, 7, and 8 include subjective visual, auditory, sensory, or tactile hallucinations experienced by The Prophet¹. In PRE-1, there was a prolonged visualization, repeated two-way verbal communication, and tactile perception (repeated painful compressions of Mohammad's¹ chest). This revelation caused fear, sweat, and coldness; PRE-2 had the subjective sound of bells ringing. Visualization of an angel at The Prophet's¹ request occurred in PRE-7. Epilepsy does not occur on volition or include two-way communication. In PRE-8, there was a perception of "blowing into the heart." This can be deduced as simple partial sensory seizure; however, this singular event, without any subsequent definitive signs and symptoms suggesting epilepsy excludes the diagnosis of epilepsy.

Group 3 (objective visual/auditory perceptions): In PREs 4, 5, 6, and 9, visual or auditory experiences during revelations as witnessed/experienced by people around The Prophet¹. These phenomena were witness-reported subjective or objective and, in some cases, relatively complex. In PRE-5, an objective change was witnessed by people around, while the subjective physical pressure was perceived by the companion. During PRE-6, a sound similar to buzzing honeybees was heard by observer, and in PRE-9, The Prophet¹ was observed trembling, which per se is not epilepsy.

Group 4 (symptoms mimicking generalized seizures): In PRE-10, others observed frothing or foaming, grunting, or snorting like a camel, as well as falling down. This PRE does mimic some features of a seizure. Further details are not available. It is possible that The Prophet¹ had a simple fainting episode but was helped and prevented from lying flat on the ground by his companions thus a simple syncope changed into a complex one similar to Phone Booth Syncope [33]. This is the only event that is closest to an epileptic convulsion and even if considered so, a single seizure does not constitute epilepsy under ILAE classification of 2014, unless there is evidence of high risk of recurrence [23], and apparently, there was none. The episodes were not stereotyped, and the sign and symptoms during every PRE were different except for some that accompany with fear.

Of the 10 PREs discussed above, features of only one could possibly be considered as epilepsy. The rest do not show any distinct neurological signs and symptoms to conclude these as epileptic attacks. All 10 PREs were accompanied by *Quranic* revelations. It is generally observed that most epileptic attacks are followed by stupor, confusion, and amnesia and is highly unlikely that 6236 *ayas* (*aya* is one complete *Quranic* statement) could possibly have been revealed during such a period, refuting the possibility of epilepsy.

Some neurologists have recorded ecstasy, a subjective sense of intense wellbeing, bliss, serenity, etc., as religious experiences in their patients. Landsborough notes Gowers and Williams to have observed these religious phenomena [34]. He writes that one of Gowers' patients described heaven during a period of ecstasy while Williams' patient reported a pleasurable aura. Devinski and Lai's literature review found that many studies reported ictal religious experiences in up to 4% of people with complex partial seizures. The descriptions of ictal religious seizures varied and included, "intense emotions of God's presence, sense of being connected to the Infinite, hallucinations of God's voice, visual hallucination of a religious figure, as well as clairvoyance, telepathy and repetition of a religious phrase" [2]. Because of amnesia of ictal phase, emphasis on witness account is stressed to diagnose epilepsy by neurologists. Also that emotions during epileptic events are generally believed to be indescribable, and thus, the affected chose closest metaphors to describe their feelings. That would

explain the use of cultural words, such as heaven, god, and angel. For example, the sense of heaven might be a metaphor for ultimate bliss. Thus, words such as religious, when used in scientific articles, may be misleading.

4. Conclusion

Mohammad¹, The Prophet of Islam, is one of several venerable prophets labeled as epileptics by historians. A debate about this subject began with the early Greek orientalists and historians and has continued for more than a millennium. This debate has been most active within literary circles but, in the current digital age, the internet has brought it to the public's attention. Internet search using key words "Mohammad¹ – Epilepsy" provides innumerable citations. During the past three decades, the discourse of this debate has undergone a noticeable change with the use of term psychomotor temporal lobe epilepsy by neurologists with reference to The Prophet¹. After comprehensive study of historical literature and the *Hadith*, this paper presents a neurological analysis of several peri-revelation events, to contest that The Prophet Mohammad¹ did not have epilepsy. To date, the neurology community has not participated in this discourse, but with opinions of neurologists trickling in on this topic it is time for the neurology community with all its advancements clear the air. This must be done by sifting untouched historical resources and analyzing them from an unbiased neurological perspective.

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Declaration of competing interest

I have read and understood *Epilepsy and Behavior* policy on declaration of interests and declare that I have no competing interests.

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