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Mathematics in Muslims Daily Life:

A Qualitative Study of the Intersection between STEM, Faith, and Cognitive Harmony

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Abstract

Main purpose of this study was to explore the everyday relevance of mathematics in the lives of practicing Muslims. It also examined how mathematical patterns in everyday actions and religious rituals contribute to psychological comfort and cognitive harmony. Furthermore, it highlighted the indispensable role of STEM (Science, Technology, Engineering, and Mathematics) particularly mathematics, as foundational elements regularly used in everyday life leading to mental comfort. It aims to understand how faith shapes attitudes toward math and highlights its inseparability from practical and spiritual dimensions. Using a qualitative research design, semi-structured interviews were conducted with a purposive sample of eight mathematics (n=4) and social sciences Muslims teachers (n=4). Thematic analysis was used to uncover themes relating to the integration of maths in religious and daily contexts. Five key themes emerged: mathematics and faith; unconscious everyday mats use; order as mental comfort; math as divine and spiritual language; and transformation of positive math attitudes. The findings indicated that mathematics is experienced in everyday life as practical and spiritual framework to enhance well-being and cognitive clarity. Although mathematics plays a central role in daily life, its practical and deeply integrated nature is often overlooked, especially in STEM education. This study highlights this neglected dimension by investigating how mathematics is experienced as a dynamic and practical subject, closely bonded with both faith and everyday activities. This study contributes unique insights to the

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interdisciplinary dialogue between mathematics education, psychology, and Islamic studies. It highlights how integrating religious perspectives can enhance the acceptance of math and promote psychological resilience, offering implications for educators and faith communities alike.

Keywords: Mathematics, STEM, Faith, Qualitative Study, Psychological Comfort, Spiritual Language, Religious Practices, Everyday Math, Cognitive Harmony.

1. Introduction

In a world where STEM disciplines often appear disconnected from human emotions and spiritual life, mathematics quietly forms the spine of many religious practices especially in Islam. The daily lives of practicing Muslims are punctuated by acts rooted in numerical precision: the five daily prayers, zakat calculations, lunar calendar observations, and geometrically aligned worship postures. These are not just rote rituals; they represent a deep cognitive alignment between faith and order. This research proposes that mathematics, far from being a sterile academic subject, is embedded in everyday Muslim life in ways that enhance psychological well-being, offer cognitive clarity, and deepen spiritual connection. The interplay of number, structure, and meaning may provide an underexplored but profound pathway to mental coherence, especially within the context of religious identity (Nasir et al., 2021).

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This study explores how mathematical patterns and logics in Islamic rituals contribute to both daily functioning and psychological comfort. Moreover, it investigates how faith shapes attitudes toward mathematics, not merely as a utilitarian discipline, but as a spiritual and emotional tool. Unlike Western portrayals that often separate science from belief, Islamic traditions portray knowledge (including math) as sacred (Mohamed, 2020). When a practicing Muslim calculates prayer times based on solar positions or aligns themselves toward the Qibla using geometric models, they enact a relationship with mathematics that is experiential, habitual, and faith-anchored that brings both order and internal peace (Laird & Al-Hadhrami, 2022).

This study is grounded in three modern theoretical models that offer insights into the psychological and cultural significance of mathematics in religious life. **First**, the *Predictive Processing Framework* (Clark, 2013; Kiverstein et al., 2020) posits that human brains are prediction machines that crave structured input to reduce uncertainty. Religious rituals involving mathematics such as consistent prayer schedules or zakat computations fulfill this cognitive need for prediction and order, thereby reducing anxiety and enhancing mental clarity and make cognitive experience harmonious.

Secondly, the study uses the *Situated Cognition Theory* (Brown et al., 2018), which holds that knowledge and thinking are always situated in social, cultural, and physical contexts. Mathematics in Islamic life is not abstract but situated: time is measured through celestial observation, wealth is quantified

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ethically through zakat, and sacred geometry guides mosque architecture and spatial orientation. These experiences reinforce math literacy as both a cultural and cognitive act, thereby deepening its internalization.

The Religion as a Meaning System Model (Park, 2013; Zarzycka & Bartczuk, 2021) offers a psychological explanation of how spiritual frameworks help individuals to make sense of the world. When mathematical order aligns with religious purpose such as calculating the precise days of Ramadan or aligning rows during congregational prayer, it adds a layer of existential meaning. This alignment supports emotional regulation and fosters what psychologists' term "meaning-based coping," especially in stressful or uncertain environments. Islam's historical encouragement of mathematical exploration from the algebra of Al-Khwarizmi to the trigonometry of Islamic astronomy is well documented. But today, everyday Muslims still engage with mathematical reasoning in ways that reinforce both faith and function. A Muslim calculating zakat is engaging with ethical math; one who relies on moon-sighting applications is integrating faith with astronomical data. These practices represent a fusion of cognitive skills and spiritual intention. Research has shown that religious practices that involve structured routines and numeric regularity often contribute to greater mental stability, clarity of thought, and reduction in cognitive load (Goodman et al., 2021; Malik & Adnan, 2023).

Moreover, qualitative evidence suggests that these mathematical rituals may cultivate mindfulness; a structured form of attention aligned with spiritual

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discipline (Kassam & Mali, 2020). Unlike secular time management, prayer scheduling fosters presence, purpose, and transcendence. In this light, mathematics ceases to be merely a tool for calculation and becomes a medium for spiritual orientation. Rather than being perceived as intimidating or abstract, math becomes approachable, even therapeutic, when placed within a culturally and religiously meaningful framework (Rahman & Kamaludeen, 2022).

In sum, this research contends that mathematics in Muslim daily life is more than a silent utility. It is an active source of structure, clarity, and spiritual anchoring. Grounded in modern psychological and cognitive theories, this study contributes a culturally nuanced lens to both mathematics education and religious psychology. By understanding math not just as a neutral skill but as a culturally embedded, spiritually anchored experience, we can better appreciate its potential for mental comfort and well-being. Ultimately, when mathematics intersects with faith, it reveals itself not only as a path to knowledge, but as a path to inner peace.

2. Method

2.1 Research design

This study employed a qualitative research design to explore the everyday relevance of mathematics in the lives of practicing Muslims.

2.2 Sample

A purposive sample was comprised of total of eight participants, including four

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mathematics teachers and four social sciences teachers from different universities in Punjab, all of them were identified as practicing Muslims actively engaged in their religious activities. Data was collected through semi-structured, in-depth interviews from the participants in their respective universities. The interview guide was designed to elicit insights into the conscious and unconscious applications of mathematics in religious practices, daily routines, and personal attitudes toward the subject. Here are some examples of interview questions are "In your daily life, do you find yourself using numbers or calculations?'' Can you give some examples?", 'Can you share an experience where this structure or numeric awareness brought you peace, clarity, or discipline?''

2.3 Procedure

All participants provided informed consent prior to participation, and the confidentiality of the data was followed throughout the research process. Interviews were audio-recorded with consent, transcribed verbatim, and analyzed using thematic analysis. This approach facilitates the relevant structure and helps in finding the meaningful themes within the data, capturing the significant interplay between mathematical perspective, spirituality and religious practices, and mental comfort.

2.4 Main Research Question

How do Muslims experience and understand the role of mathematics in their

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everyday religious life?

3. Result

Table 1. Major Themes of the Qualitative Data (N=8)

Major Themes	Frequency (8)	Description	Initial Themes	Data Extracts Examples
1. Mathematics and Faith	7	Muslims use Mathematics in Islamic rituals and religious practices	Following exact 5 prayers (Salah) daily Lunar calendar for tracking Ramadan and Hajj Exact timings for worship	"I never thought of things as math, but yes, there's maths and counting in everything from prayers to Hajj." "The lunar calendar helps us to decide fasting days precisely."
2. Unconscious Everyday Math Use	6	Use of math in daily activities without explicit awareness	Dieting plan and quantity Daily Budgeting Time management Measuring quantities in cooking Tracking fasting times	"I hated math in school, but now I'm dividing food portions for my own health track and also tracking expenses daily." "I don't think I know math, but I use it every day with my hands and head."

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Major Themes	Frequency (8)	Description	Initial Themes	Data Extracts Examples
3. Order as Emotional Comfort	7	Following numeric routines provide emotional stability and reducing anxiety	Prayer schedules with predictable routines Organizing life with numbers	"When I wake up for Fajr prayer and follow each prayer on time, my whole day feels balanced and it gives my day a peaceful rhythm." "Numbers and routines help me stay focused and calm". I use a timetable with exact hours"
4. Math as a Divine and Spiritual Language	5	Numbers and balance perceived as divine wisdom and spiritual symbols	Symbolic importance of numbers (7 heavens, 99 names of Allah) Feeling that math is part of Allah's design Spiritual interpretation of numbers in Quran Viewing math as sacred subject	"It's like Allah gave us math to structure life with peace and purpose." "The balance in nature's laws like sunset sunrise, seasons etc. feel too perfect to be random. I Feel it must be from Allah" "Numbers like 7, 3, and 99 are signs, not just numbers."

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Major Themes	Frequency (8)	Description	Initial Themes	Data Extracts Examples
5.Transformation of Positive Math Attitudes	6	Changed perceptions and improved acceptance of math due to faith connection	Overcoming math anxiety connection between math and faith Religious use of mathematical concepts Zakat ratio calculations (2.5%)	"I used to fear math. But now I see it's just a way to understand and organize what Allah has already set." "I explain math concepts to kids by connecting it to Quranic teachings." "When I learned how Zakat is calculated made me realize math has a real, spiritual purpose" "I was thinking how exact figures for zakat Allah has given and how accurate is the balance for both givers and takers."

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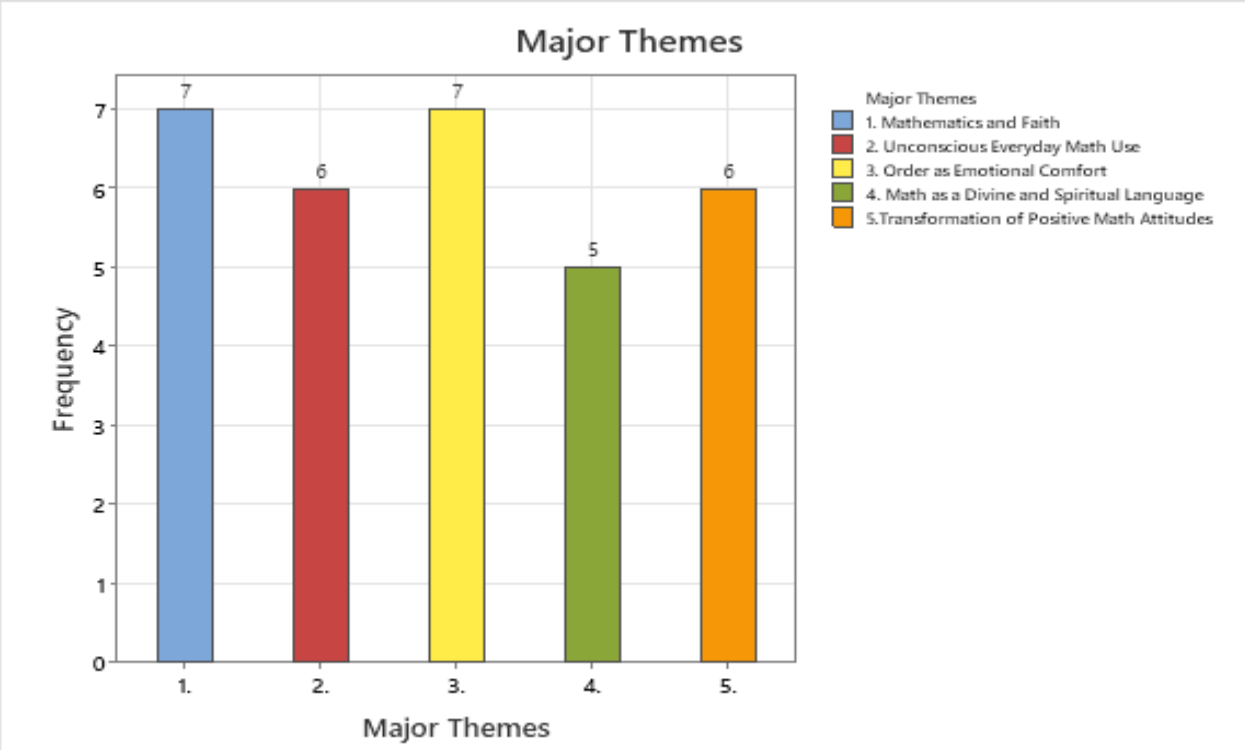
Figure 1: ***Graphical Representation of the Major Themes Emerging From the Qualitative Data***



4. Discussion

The first theme (see Figure 1) was about *Mathematics embedded in faith practices*. Many participants from both mathematics and social sciences backgrounds expressed how they had not consciously realized the presence of mathematics in their daily religious routines. A mathematics teacher noted, ***"I never thought of using maths in my life… but then I realized I am using it on a***

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***daily basis*,"** referring to calculating prayer times and managing morning routines. Another participant emphasized the precision of fasting routines: **"*I accurately use maths in fasting, even take record of minutes*."** These experiences are supported by Ahmed and Aslam (2022), who observed that Muslim households in Pakistan unconsciously integrate mathematical principles in prayer, fasting, and zakat calculations. Pinxten and François (2020) further highlighted in their cross-cultural work that religious traditions across the globe foster numeric awareness, embedding spiritual meaning within quantitative practices.

The second theme was about *unconscious everyday math use*. Participants described how, despite disliking math in school, they now apply it regularly in budgeting, dividing food portions, and managing time. One social sciences teacher admitted, **"*I hated math in school, but now I'm dividing food portions and tracking expenses daily*."** These insights are supported by Hussain and Zafar (2021), who concluded that Pakistani undergraduates often employ mathematical reasoning in their daily lives without consciously identifying their actions as mathematical. Lee and Larkin (2020) similarly coined this phenomenon "invisible mathematics," describing how adults across cultures naturally perform complex numerical operations in tasks like household management, shopping, and scheduling.

The third theme was about *order as emotional comfort*. Participants explained how structure, routine, and numerical order help bring psychological ease. One mathematics teacher remarked, **"*When I calculate mathematically and follow the schedule, I feel very relaxed and sleep with peace*."** This supports

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research by Fitzgerald and Tan (2023), who found that individuals who used number-based routines and planning reported better emotional regulation, increased productivity, and reduced anxiety. Their study emphasized that numerical thinking can be a grounding mechanism contributing to cognitive harmony and internal control.

The fourth theme was about *math as a divine and spiritual language*. Participants interpreted religious numbers as sacred signs and viewed them as meaningful connections to the divine. References were made to the 99 names of Allah, the creation of the seven heavens and earths, and specific counts in supplications. One participant stated, **"*The exact numbers prescribed by Prophet Muhammad (PBUH)… hold meaningful connection to Allah Almighty*."** D'Ambrosio (2021) explains that numbers carry symbolic and sacred meanings across spiritual traditions, forming what he calls "ethno mathematical spirituality." Likewise, Mahmood and Riaz (2023) observed that Pakistani educators see numerical patterns in Islamic teachings as reflections of divine order, enhancing both faith and intellectual engagement.

The fifth and final theme was about *transformation of math attitudes through faith*. Several participants shared how their appreciation for mathematics increased as they became more aware of its spiritual relevance. One participant reflected, "I now love math concepts more than before," after recognizing the significance of numbers in Islamic teachings like zakat ratios and Tasbeeh repetitions. Shahbaz and Malik (2022) reported that students in faith-based Pakistani institutions showed more interest in math when it was taught in a

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culturally and spiritually integrated context. Similarly, Alghamdi and Bardsley (2020) demonstrated that embedding religious content within mathematics instruction in Saudi Arabia reduced math anxiety and fostered motivation by connecting abstract concepts with students' spiritual beliefs.

5. Conclusion

This study explored the nuanced interplay between mathematics, daily religious practices, and mental well-being among Muslim educators from diverse academic backgrounds. The findings revealed that mathematics is deeply embedded in religious rituals and everyday routines, often operating at an unconscious level. Participants described how structured routines rooted in numerical practices offer emotional comfort, how spirituality enhances the symbolic meaning of numbers, and how awareness of these connections can positively shift attitudes toward mathematics. These insights reinforce the idea that mathematics is not merely an abstract academic discipline but is a lived, spiritual, and psychological experience (D'Ambrosio, 2021; Shahbaz & Malik, 2022). By connecting numbers to divine order and daily life, math becomes a comforting tool that fosters cognitive clarity and spiritual alignment, particularly within faith-based communities.

6. Limitations and Recommendations

The sample was restricted to teachers limiting the generalizability of the data. The study only included educators; perspectives from students, homemakers, or other professionals were not explored. Self-reported data may be influenced by

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social desirability bias, particularly in a religious context, where participants might emphasize positive interpretations. Cultural and spiritual interpretations of mathematics may not apply uniformly across all Muslim communities or faiths, requiring broader validation. The study was qualitative and interpretative; it did not measure psychological constructs (e.g., stress or clarity) quantitatively, limiting empirical generalizability.

It is recommended to expand future research to include diverse demographic groups to gain a holistic understanding of math use in faith-based life. Furthermore, conducting cross-cultural and cross-sectarian studies would enhance the impact of this research. Based upon findings, it is also suggested to develop mental health interventions by using structured numeric routines to support emotional regulation and well-being. Additionally, mixed-methods research design is highly recommended to combine narrative insight with quantitative measures of math attitude, religiosity, cognitive harmony and psychological comfort.

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