Determination of the Deadline for Isha Prayer: Fiqh and Astronomical Analysis of the Concept of Midnight

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ABSTRACT

The determination of the deadline for Isha prayer is one of the important issues in the study of fiqh that has practical implications in the lives of Muslims. The difference of views among scholars regarding the time limit, especially in relation to the concept of midnight (*nişf al-layl*), shows that there is a space for interpretation influenced by textual and contextual approaches. This study aims to analyze the deadline for Isha prayer through an integrative approach between fiqh and astronomy. The method used is qualitative research with a normative-analytical approach to classical sources of fiqh and a scientific approach through astronomical calculations of night time. The results of the study show that the majority of scholars set midnight as the main limit (*ikhtiyārī*) of Isha time, while the final limit remains until dawn with a different legal status. From an astronomical perspective, midnight can be calculated objectively based on the time difference between Maghrib and Fajr which is divided in two, thus providing a quantitative basis in determining the time of worship. This integration between fiqh and astronomical approaches strengthens the understanding that midnight has not only a normative dimension, but also scientific precision. Thus, this study emphasizes the importance of using an interdisciplinary approach in formulating accurate and applicable worship time limits in the modern era.

ABSTRAK

Penentuan batas akhir waktu shalat Isya merupakan salah satu isu penting dalam kajian fikih yang memiliki implikasi praktis dalam kehidupan umat Islam. Perbedaan pandangan di kalangan ulama terkait batas waktu tersebut, khususnya dalam kaitannya dengan konsep pertengahan malam (*nişf al-layl*), menunjukkan adanya ruang interpretasi yang dipengaruhi oleh pendekatan tekstual dan kontekstual. Penelitian ini bertujuan untuk menganalisis batas akhir waktu shalat Isya melalui pendekatan integratif antara fikih dan astronomi. Metode yang digunakan adalah penelitian kualitatif dengan pendekatan normatif-analitis terhadap sumber-sumber klasik fikih serta pendekatan ilmiah melalui perhitungan astronomi waktu malam. Hasil penelitian menunjukkan bahwa mayoritas ulama menetapkan pertengahan malam sebagai batas utama (*ikhtiyārī*) waktu Isya, sementara batas akhirnya tetap berlangsung hingga terbit fajar dengan status hukum yang berbeda. Dalam perspektif astronomi, pertengahan malam dapat dihitung secara objektif berdasarkan selisih waktu antara Maghrib dan Subuh yang dibagi dua, sehingga memberikan dasar kuantitatif dalam penentuan waktu ibadah. Integrasi antara pendekatan fikih dan astronomi ini memperkuat pemahaman bahwa pertengahan malam tidak hanya memiliki dimensi normatif, tetapi juga presisi ilmiah. Dengan demikian, penelitian ini menegaskan pentingnya penggunaan pendekatan interdisipliner dalam merumuskan batas waktu ibadah yang akurat dan aplikatif di era modern.

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INTRODUCTION

The determination of the deadline for Isha prayer is an issue that continues to be relevant in the religious practice of Muslims, especially in the midst of the increasingly complex dynamics of modern life. In social reality, not a few Muslims postpone the implementation of Isha prayers until late at night, both because of work activities, education, and social habits that develop (Firdaus, 2017). This condition is often exacerbated by a lack of a comprehensive understanding of the ideal time limit and the permissible deadline in the implementation of the Isha prayer (Nurqolbi & Noosy, 2024). In various regions, including Indonesia, the difference in Maghrib and Fajr times that fluctuate throughout the year also affects people's perception of midnight (Sakirman et al., 2024). In addition, the use of a prayer schedule based on a digital application that is not always understood in its methodology adds complexity in determining the right time (Hajarchicago, 2018). In this context, there is a tendency for some people to assume that the time of Isha lasts until before dawn without considering the dimension of the primacy of time (Rizal et al., 2024). This phenomenon shows that there is a gap between religious practice and normative understanding that should be the foundation. Therefore, the study of the deadline for Isha prayer is important not only as an academic discourse, but also as an effort to answer the practical needs of Muslims (Qulub & Sanuri, 2024). Thus, this research departs from the social reality that demands conceptual and applicative clarity related to the time of Isha prayer.

In the realm of literature, the discussion of the time of Isha prayer has been widely studied in classical and contemporary jurisprudence, but it still leaves room for diverse interpretation. The scholars of the sects such as Shafi'i, Maliki, Hanbali, and Hanafi have different emphasis on the deadline of Isha, especially in understanding the hadiths related to midnight (*niṣf al-layl*). Some literature asserts that midnight is the main limit (*ikhtiyārī*), while others give a leniency until dawn as the final limit (*jawāz*). On the other hand, the study of Islamic astronomy has developed rapidly in providing a quantitative approach to the determination of night time, including the concept of midnight which is calculated based on the interval between Maghrib and Fajr (Agus Firmansyah & Fahmi Fatwa Rosyadi, 2021). However, the integration between normative fiqh studies and empirical astronomical approaches is still relatively limited and often runs partially. Many studies only emphasize one aspect without connecting it systematically. This results in a lack of a comprehensive framework capable of explaining the relationship between legal norms and scientific reality in its entirety.

Based on this background, this study aims to analyze in depth the deadline for Isha prayer through an integrative approach between fiqh and astronomy. In particular, this study seeks to examine how the concept of midnight (*niṣf al-layl*) is understood from the perspective of fiqh scholars and how it can be calculated precisely with an astronomical approach. In addition, this study also aims to identify the difference between the main and final time limits in the implementation of the

Isha prayer and its implications in religious practice. By combining normative analysis of Islamic legal sources and a scientific approach based on time calculation, this research is expected to be able to provide a more comprehensive and applicable understanding. Another goal that is no less important is to contribute to the development of interdisciplinary studies in Islamic studies, especially in the fields of jurisprudence and astronomy. Thus, this research is not only descriptive, but also analytical and constructive in formulating new understandings that are relevant to the current context.

The novelty in this study lies in the systematic integration of the perspective of classical fiqh and modern astronomical approaches in determining the deadline for Isha prayers. In contrast to previous studies that tend to separate normative analysis and scientific calculations, this study explicitly links the two in one intact conceptual framework. In addition, this study also offers a reinterpretive approach to the concept of *nisf al-layl* by placing it not only as a normative category, but also as an entity that can be measured quantitatively and objectively. Another novelty is the emphasis on the applicative aspect, where the results of this study are expected to be a reference in the preparation of a more accurate prayer time schedule based on scientific integration. Thus, this research contributes not only to the theoretical level, but also to the religious practice of Muslims. Overall, this study emphasizes the importance of an interdisciplinary approach in answering contemporary fiqh problems related to the development of science and technology.

METHOD

This study uses a qualitative approach with a type of literature research that focuses on conceptual and normative analysis of the deadline for Isha prayer (Atkinson, 2016). This approach was chosen because the object of study is not only in the form of empirical phenomena, but also religious texts that require in-depth interpretation. Qualitative research allows researchers to explore the meaning, arguments, and construction of the thinking of scholars regarding the concept of midnight (*nisf al-layl*). In addition, this study also integrates an interdisciplinary approach by combining the study of fiqh and astronomy as the two main analytical frameworks (Zainal et al., 2023). The fiqh approach is used to examine normative aspects sourced from the Qur'an, hadith, and the opinions of scholars, while the astronomical approach is used to provide a quantitative basis for calculating time (Wahyudin Darmalaksana, 2020). Thus, this method is not only descriptive, but also analytical and comparative in understanding the differences in perspectives. The selection of this method is expected to be able to produce a comprehensive and in-depth analysis, as well as relevant to academic and practical needs. Therefore, this study places text and context as two complementary elements in the analysis process.

The data sources in this study consist of primary and secondary data that are relevant to the topic of study (Sugiyono, 2010). Primary data includes classical fiqh books from various schools, especially those that discuss prayer times, as well as

hadiths related to the time limit of Isha prayer and the concept of midnight (Jannah, 2020). In addition, primary data also includes Islamic astronomical literature that explains the calculation of night time based on astronomical phenomena, such as the time of sunset (Maghrib) and dawn (Fajr). The secondary data is in the form of books, scientific journal articles, and previous research that discusses similar themes, both from the perspective of fiqh and astronomy (Yusuf, 2014). Data collection is carried out through documentation techniques by searching for credible written sources that have academic authority. In this process, the researcher also selects data sources based on their relevance, validity, and contribution to the discussion. Thus, the data used in this study are the results of curation that aims to support optimal analysis. This diversity of data sources allows researchers to obtain a complete and balanced picture of the issues being studied.

The data analysis technique in this study is carried out through several stages, namely data reduction, data presentation, and conclusion drawing (Moleong, 2016). In the reduction stage, the researcher identifies and selects data that is relevant to the focus of the research, especially related to the deadline for Isha prayer and the concept *of nisf al-layl*. Furthermore, the selected data were analyzed using a normative-analytical approach to understand the fiqh arguments used by scholars, as well as a comparative approach to compare differences of opinion among madhhabs. On the other hand, astronomical analysis is carried out by examining the midnight calculation method based on the time interval between Maghrib and Fajr, so that a quantitative understanding is obtained (Sakirman et al., 2024). The results of the two approaches are then integrated in a single analytical framework to see the relationship between legal norms and scientific reality. The final stage is the drawing of conclusions that are carried out inductively, namely by formulating general findings based on the results of the analysis that has been carried out. With this analysis technique, the research is expected to be able to produce valid, systematic, and significant academic findings. The analysis of research data is presented in the following flow:

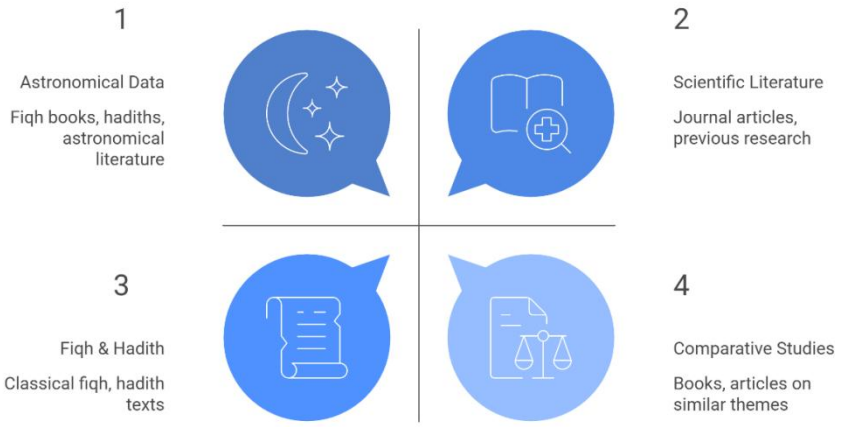


Figure 1. Research Data Analysis

Figure 1 above illustrates the framework of data sources and approaches used in a study, especially related to the integration between astronomy and Islamic studies. In general, there are four main components that complement each other. First, Astronomical Data, which includes astronomical observation and calculation data and related literature. This data is an empirical basis for understanding celestial phenomena, such as the movement of the sun and moon, which are very important in determining the time of worship in Islam. Second, Scientific Literature, which is various modern scientific sources such as journal articles and previous research results. This component serves to provide a strong theoretical and methodological foundation, while ensuring that the studies carried out have academic relevance and follow the latest scientific developments. Third, Fiqh and Hadith, which include classical fiqh books and hadith. This source is a normative foothold in the study, because it contains the provisions of Islamic law and the interpretation of scholars related to worship practices related to astronomical phenomena. Fourth, Comparative Studies, which is a comparative study of various literature that has a similar theme. This approach allows researchers to see differences and similarities in views, both in terms of jurisprudence and science, resulting in a more comprehensive and in-depth analysis. By integrating these four aspects, the studies conducted are not only textual or empirical, but also able to present a synthesis between normative and scientific approaches in a balanced manner.

RESULTS AND DISCUSSION

Fiqh Perspective on the Deadline for Isha Prayer

The perspective of fiqh regarding the deadline for Isha prayer is one of the important studies in the discipline of Islamic law that shows the breadth and flexibility of scholars' understanding of the postulates of sharia (Sakirman, 2018). In general, scholars divide the time of Isha prayer into two main categories, namely *the time of ikhtiyārī* (the main time) and *the time of jawāz* (time of ability). This division is not only technical, but also reflects a methodological approach in understanding the Prophet's hadiths and the basic principles in ushul fiqh (Farah, 2020). The *time of ikhtiyārī* is understood as the most important and recommended time to perform prayer, while *the time of jawāz* indicates the period of time in which prayer is still valid to be performed even though it is no longer at the level of priority (Agus Firmansyah & Fahmi Fatwa Rosyadi, 2021). In this context, the concept of midnight or *niṣf al-layl* is the main point of discussion that is often used as a dividing line between the two categories. Therefore, understanding this time limit is not only theoretically important, but it also has practical implications in the daily lives of Muslims. The difference of views among scholars also shows that there is a wide space for ijtihad in establishing the law. This is also proof that Islamic sharia has an adaptive character to various conditions. Thus, this study not only enriches scientific insights, but also provides practical guidance for the people in carrying out worship optimally.

The majority of scholars from the Shafi'i, Maliki, and Hanbali schools agree that the main time of the Isha prayer ends at midnight. This opinion is based on a number of hadiths that state that the time of Isha lasts until half the night, which is then understood as the limit of virtue in its implementation. In their interpretation, midnight does not mean the end of the valid time of prayer, but rather the end of the most recommended time. Therefore, a person who performs the Isha prayer after midnight is still considered valid, but has abandoned the priority of the other. This approach reflects a balance between textual understanding of the hadith and rational considerations in the application of the law. The scholars also emphasized that the implementation of prayer at the beginning of the time reflects obedience and discipline in worship. In addition, they also consider the general condition of the ummah who may have limitations in postponing prayers until late at night. Therefore, setting midnight as the main time limit is a form of moderation in Islamic law. Thus, this majority view provides a clear and flexible guide for Muslims. This also shows that the virtue of time has its own value in worship practice. Awareness of this virtue is expected to encourage the people to be more disciplined in maintaining prayer times.

The Hanafi school has a different view by giving a wider time limit for the implementation of the Isha prayer. According to them, the time of Isha lasts until dawn without a firm division between the main time and the emergency time. This opinion is based on their understanding of the postulates that show that the entire range of night to dawn is still included in the time of the Isha prayer. As long as a person performs the prayer before dawn, his prayer is still considered valid without a significant decrease in the degree of virtue. This approach shows the tendency of the Hanafi madhhab in providing convenience (*taysīr*) for Muslims (Herianto et al., 2022). They also consider the conditions of diverse communities, including those who have busyness or limited time. This extension of time can be understood as a form of relaxation in the sharia. However, it does not mean that the Hanafi school recommends postponing prayer for no reason. They still emphasize the importance of praying at an earlier time as a form of prudence (Neli Maryam Sanjung, 2025). Thus, this difference shows that there is a variation in the legal approach that remains within the sharia corridor. It also reflects the rich intellectual tradition in Islam.

The difference of opinion among these schools cannot be separated from the methodological variations in the legal istinbat. Scholars have different ways of understanding the text of the hadith, both in terms of redaction, context, and how to compromise it with other postulates. In addition, the principles in ushul fiqh also play an important role in determining legal conclusions. For example, differences in assessing the strength of the hadith or in understanding the meaning of the words can lead to different conclusions. This shows that Islamic law is not monolithic, but has a broad spectrum of understanding. This difference is also proof that ijtihad is an integral part of the development of Islamic law. In this context, Muslims are given the space to choose the opinion that best suits their conditions and needs (Al Hasanah,

2020). However, these differences remain within the limits that are acceptable in sharia. Therefore, it is important for the people to understand the background of these differences so as not to cause confusion. Tolerance towards differences is also an important value in responding to diversity of opinions.

In contemporary developments, some scholars tend to emphasize the importance of performing the Isha prayer before midnight as a form of prudence in worship (Ramadhanti et al., 2020). This approach is known as *the principle of iḥtiyāṭ*, which is taking a safer stance in practicing religious teachings. This is done to avoid the possibility of missing the main time or even missing the prayer. In the context of modern life full of busyness, this advice is becoming increasingly relevant (Atmanto, 2012). Many Muslims face challenges in managing time, so the emphasis on the implementation of prayers at the beginning of the time is a practical solution. In addition, maintaining consistency in performing prayers at the main time can also improve one's spiritual quality. The concept of *niṣf al-layl* in this case retains a central position as a normative boundary that distinguishes between prime and non-prime time (Qulub & Sanuri, 2024). Although there are differences of opinion among scholars, there is substantive agreement on the virtue of praying before midnight.

Astronomical Analysis of the Concept of Midnight (*Niṣf al-Layl*)

From an astronomical perspective, midnight (*niṣf al-layl*) can be objectively determined through mathematical calculations based on the time interval between Maghrib and Fajr divided by two (Zainuddin, 2020). This approach provides a clear quantitative basis for determining the midnight limit in a given location. The data used in this calculation is sourced from the position of the sun, namely the time of sunset as the beginning of the night and the dawn as the end of the night (Skf & 2016, 2016). The results show that the duration of the night is not constant throughout the year, but changes according to the apparent movement of the sun. Although in Indonesian territory the variation is not as extreme at high latitudes, the difference in night duration still affects the midnight time (Ahmad Ridwan Al-faruq, 2013). Therefore, the determination *of niṣf al-layl* cannot be generalized in a fixed manner, but must be calculated based on actual local time data. This astronomical approach allows for a more precise and contextual determination of worship times, especially in the preparation of prayer schedules. In addition, the results of this analysis also show that the concept of midnight in fiqh has an empirical basis that can be scientifically verified (Ramadhanti et al., 2020). Thus, astronomy plays an important role in operationalizing normative concepts into measurable time parameters. This strengthens the relevance of the integration between astronomy and fiqh in religious practice.

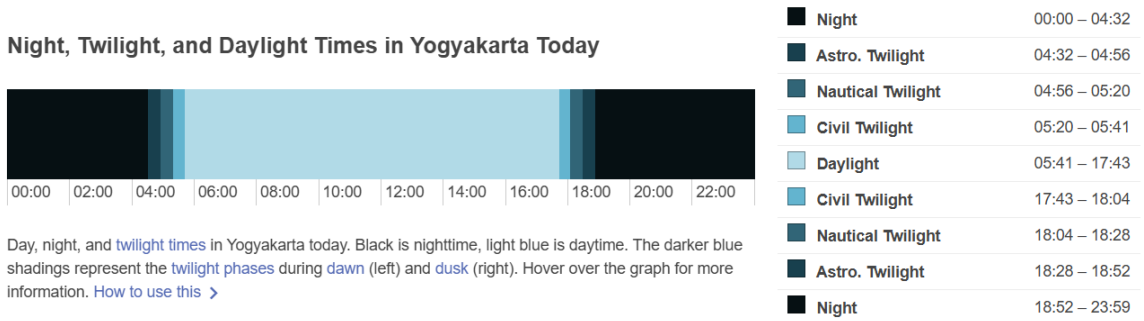


Figure 2. Day–night time chart

Figure 2 shows the division of night, twilight, and day time in Yogyakarta in one daily cycle. The data shows that the night phase starts from sunset (around 18:04 when the civil twilight ends) until dawn (around 05:20 when the civil twilight starts in the morning). Between these ranges are several twilight layers, namely civil, nautical, and astronomical twilight, which astronomically describes the Sun's position below the horizon. This information is very important in the study of determining the deadline for Isha prayers, because it is directly related to the concept of the loss of dusk light (*syafaq*) and the perfect entry of night darkness (Safrida & Machzumy, 2022).

From the perspective of jurisprudence, the majority of scholars agree that the beginning of the Isha prayer time begins when the red shafaq disappears on the western horizon. However, differences arise when discussing the end limit. Some scholars argue that the time of Isha ends at midnight (*nisf al-layl*), while others extend it to a third of the night or even until dawn. This concept of "midnight" is not simple, as it requires an operational definition of when the night starts and ends. This is where astronomical data as shown on the graph becomes relevant, as it provides quantitative parameters about the duration of the night that can be precisely calculated.

Astronomically, night can be defined as the span of time from the time the Sun is more than 18 degrees below the horizon (the end *of astronomical twilight*) until it is back close to the horizon before dawn. In the graph, the *astronomical twilight* phase ends at around 18:28 and starts again at around 04:32. Thus, the range of "full astronomical nights" lies between the two times. If the midnight concept is calculated based on this interval, then the midnight point will fall around 11:30 p.m. However, if you use a more general definition of fiqh—that is, from sunset to dawn—then midnight is at the midpoint between around 18:00 and 05:20, which is around 23:40.

This difference in approach shows that there is a methodological tension between the definition of classical fiqh and the parameters of modern astronomy. Fiqh tends to use phenomenological indicators that can be observed with the naked eye, such as the loss of red light on the horizon, whereas astronomy provides a more precise and consistent approach based on the Sun's depression angle. In the context

of modern society, especially in urban areas with light pollution, visual indicators are often difficult to observe, so astronomical approaches are a more reliable alternative.

Thus, the analysis of the deadline for Isha prayer through the concept of midnight requires the integration between fiqh and astronomy. Data such as those shown on the twilight time graph in Yogyakarta provides an empirical basis for accurately calculating midnight. Meanwhile, the fiqh framework provides normative legitimacy to these limitations. The synergy between the two allows the determination of worship times that are not only shari'a legal, but also scientifically precise, so that they are relevant to the needs of Muslims in the contemporary era.

In the study of the determination of prayer times, especially related to the deadline for Isha prayers, the existence of detailed astronomical data is very important as a basis for analysis. This is because the concept of time in fiqh cannot be separated from natural phenomena, such as the setting of the Sun, the loss of dusk light (*syafaq*), and the arrival of night darkness. In this context, modern astronomical approaches make a significant contribution through the presentation of quantitative data that is able to accurately describe the daily dynamics of the Sun's movements.

As part of this analysis, data on the time of the Sun and the phases of twilight throughout the month of April in Yogyakarta were presented. This data includes the time of sunrise and sunset, the length of the day, and the division of the twilight phases, namely civil, nautical, and astronomical twilight. The three phases represent the position of the Sun below the horizon that directly affects the level of illumination of the sky, making it very relevant in identifying the beginning and end of the times of worship, including the Isha prayer.

The presentation of this table aims to provide an empirical picture of the duration of day and night as well as the change in light phase in a full month. Through this data, a more accurate calculation can be made of the duration of the night and the determination of its midpoint (*nisf al-layl*), which is one of the important parameters in the discussion of the deadline for Isha prayers. Thus, the following table serves not only as supporting data, but also as an analytical foundation in comprehensively integrating the perspectives of fiqh and astronomy.

Table 1. Astronomical Data on the Determination of the Time of Isha Prayer (*Sunset* and *Twilight*) in Yogyakarta

Apr	Sunrise	Sunset	Length	Diff.	Start	End	Start	End	Start	End	Time	Mil. km
1	06:01 ↑ (86°)	18:04 ↑ (275°)	12:03:05	−0:17	04:52	19:13	05:16	18:49	05:40	18:25	12:02 (80.0°)	149.471
2	06:01 ↑ (85°)	18:03 ↑ (275°)	12:02:48	−0:17	04:52	19:13	05:16	18:48	05:40	18:24	12:02 (79.7°)	149.513
3	06:01 ↑ (85°)	18:03 ↑ (275°)	12:02:31	−0:17	04:51	19:12	05:15	18:48	05:40	18:24	12:02 (79.3°)	149.556
4	06:00 ↑ (84°)	18:03 ↑ (276°)	12:02:13	−0:17	04:51	19:12	05:15	18:48	05:40	18:23	12:02 (78.9°)	149.599
5	06:00 ↑ (84°)	18:02 ↑ (276°)	12:01:56	−0:17	04:51	19:11	05:15	18:47	05:39	18:23	12:01 (78.5°)	149.643
6	06:00 ↑ (84°)	18:02 ↑ (276°)	12:01:39	−0:17	04:51	19:11	05:15	18:47	05:39	18:23	12:01 (78.1°)	149.686
7	06:00 ↑ (83°)	18:01 ↑ (277°)	12:01:22	−0:16	04:51	19:11	05:15	18:46	05:39	18:22	12:01 (77.8°)	149.730
8	06:00 ↑ (83°)	18:01 ↑ (277°)	12:01:05	−0:16	04:50	19:10	05:15	18:46	05:39	18:22	12:00 (77.4°)	149.773
9	06:00 ↑ (83°)	18:00 ↑ (278°)	12:00:48	−0:16	04:50	19:10	05:14	18:46	05:39	18:21	12:00 (77.0°)	149.817
10	06:00 ↑ (82°)	18:00 ↑ (278°)	12:00:32	−0:16	04:50	19:10	05:14	18:45	05:39	18:21	12:00 (76.6°)	149.860
11	05:59 ↑ (82°)	18:00 ↑ (278°)	12:00:15	−0:16	04:50	19:09	05:14	18:45	05:38	18:21	12:00 (76.3°)	149.904
12	05:59 ↑ (81°)	17:59 ↑ (279°)	11:59:59	−0:16	04:50	19:09	05:14	18:45	05:38	18:20	11:59 (75.9°)	149.947

13	05:59 ↑ (81°)	17:59 ↑ (279°)	11:59:42	−0:16	04:49	19:09	05:14	18:44	05:38	18:20	11:59 (75.5°)	149.990
14	05:59 ↑ (81°)	17:58 ↑ (279°)	11:59:26	−0:16	04:49	19:08	05:14	18:44	05:38	18:20	11:59 (75.2°)	150.033
15	05:59 ↑ (80°)	17:58 ↑ (280°)	11:59:10	−0:16	04:49	19:08	05:13	18:44	05:38	18:19	11:59 (74.8°)	150.076
16	05:59 ↑ (80°)	17:58 ↑ (280°)	11:58:54	−0:16	04:49	19:08	05:13	18:43	05:38	18:19	11:58 (74.5°)	150.118
17	05:59 ↑ (80°)	17:57 ↑ (281°)	11:58:38	−0:15	04:49	19:07	05:13	18:43	05:38	18:18	11:58 (74.1°)	150.160
18	05:59 ↑ (79°)	17:57 ↑ (281°)	11:58:22	−0:15	04:49	19:07	05:13	18:43	05:38	18:18	11:58 (73.8°)	150.201
19	05:59 ↑ (79°)	17:57 ↑ (281°)	11:58:06	−0:15	04:48	19:07	05:13	18:42	05:37	18:18	11:58 (73.4°)	150.242
20	05:58 ↑ (79°)	17:56 ↑ (282°)	11:57:50	−0:15	04:48	19:07	05:13	18:42	05:37	18:17	11:57 (73.1°)	150.283
21	05:58 ↑ (78°)	17:56 ↑ (282°)	11:57:35	−0:15	04:48	19:06	05:13	18:42	05:37	18:17	11:57 (72.7°)	150.323
22	05:58 ↑ (78°)	17:56 ↑ (282°)	11:57:19	−0:15	04:48	19:06	05:13	18:41	05:37	18:17	11:57 (72.4°)	150.363
23	05:58 ↑ (78°)	17:55 ↑ (283°)	11:57:04	−0:15	04:48	19:06	05:12	18:41	05:37	18:17	11:57 (72.1°)	150.402
24	05:58 ↑ (77°)	17:55 ↑ (283°)	11:56:49	−0:15	04:48	19:06	05:12	18:41	05:37	18:16	11:57 (71.7°)	150.442
25	05:58 ↑ (77°)	17:55 ↑ (283°)	11:56:34	−0:14	04:48	19:05	05:12	18:41	05:37	18:16	11:56 (71.4°)	150.481
26	05:58 ↑ (77°)	17:54 ↑ (284°)	11:56:19	−0:14	04:47	19:05	05:12	18:41	05:37	18:16	11:56 (71.1°)	150.519
27	05:58 ↑ (76°)	17:54 ↑ (284°)	11:56:05	−0:14	04:47	19:05	05:12	18:40	05:37	18:16	11:56 (70.8°)	150.558
28	05:58 ↑ (76°)	17:54 ↑ (284°)	11:55:50	−0:14	04:47	19:05	05:12	18:40	05:37	18:15	11:56 (70.4°)	150.596
29	05:58 ↑ (76°)	17:54 ↑ (285°)	11:55:36	−0:14	04:47	19:05	05:12	18:40	05:37	18:15	11:56 (70.1°)	150.635
30	05:58 ↑ (75°)	17:53 ↑ (285°)	11:55:22	−0:14	04:47	19:05	05:12	18:40	05:37	18:15	11:56 (69.8°)	150.673

* All times are local time for Bandar Lampung. They take into account refraction. Dates are based on the Gregorian calendar. Today is highlighted.

The table data displayed shows the details of sunrise and sunset times as well as twilight phases throughout April in Yogyakarta. In general, the length of the day is in the range of 12 hours with a tendency to decrease slightly from the beginning to the end of the month. This has implications for the gradual increase in the duration of the night, although the change is not significant due to the geographical location of Yogyakarta which is in a low latitude area.

In the context of astronomy, the table provides important information about three types of twilight: civil, nautical, and astronomical twilight. The most crucial phase in the study of the Isha prayer time is the end of astronomical twilight, which is when the Sun is about 18° below the horizon and the sky reaches a state of perfect darkness. Based on the data, this phase occurs around 19:05–19:13 in early April and a little earlier at the end of the month. Meanwhile, the beginning of the morning astronomical twilight occurred around 4:47–4:52 a.m., marking the end of the astronomical night.

From the perspective of fiqh, the beginning of the Isha prayer time is marked by the loss of syafaq (red light on the western horizon). This twilight data provides a quantitative approach to the phenomenon, where the loss of shahaq can be correlated with the end of civil or nautical twilight, even in a more cautious approach to astronomical twilight. Therefore, the beginning of the time of Isya in Yogyakarta is in the range of around 18:40 to 19:05, depending on the criteria used.

As for determining the end of the time of Isha, the concept of midnight (nisf al-layl) is the main focus of this study. If the night is counted from sunset (around 18:00) to sunrise (around 05:00), then the duration of the night is around ±11 hours. Thus, midnight is in the range of 23:30–23:40. However, if you use an astronomical approach—that is, from the end of the astronomical twilight to the beginning of the morning astronomical twilight — the duration of the night becomes shorter, about 9 hours and 45 minutes, so that the midnight point shifts to around 23:50.

This difference suggests that the concept of "midnight" is heavily influenced by the operational definition of the night itself. Classical fiqh is based on visible phenomena, while modern astronomy provides a more precise mathematical approach. Thus, the data in Yogyakarta confirms that the determination of the

deadline for Isha prayer requires the integration of the normative approach of fiqh and the empirical approach of astronomy, so as to produce a more accurate time stipulation while still being based on sharia principles.

Integration of Fiqh and Astronomy in Determining the Time Limit of Isha

The integration between fiqh and astronomy in determining the time limit for Isha prayer not only brings together two disciplines, but also presents a more systematic approach in understanding the concept of worship time. Fiqh acts as a normative foundation that establishes a legal framework, including the categories of main time and ability time, as well as the value of virtue in the implementation of prayer. On the other hand, astronomy contributes in the form of observation and calculation methods that are able to determine natural phenomena such as the setting of the twilight and the position of the sun below the horizon. Through this approach, the time of Isha is no longer simply understood textually, but is also associated with scientific parameters that can be tested and verified. This makes the determination of prayer times more accurate and consistent in various geographical areas. In addition, the use of astronomical data allows for a standardization of time that can be widely applied by religious institutions. Thus, this integration strengthens the relationship between religious texts and empirical reality. This kind of approach also shows that Islam does not contradict science, but rather encourages its use. Therefore, the collaboration between fiqh and astronomy is a strategic step in answering the needs of modern people.

From an astronomical perspective, the time of Isha is closely related to the loss of twilight (*syafaq*) which is marked by the position of the sun at a certain degree below the horizon. Astronomers usually use the parameters of the sun's depression angle, such as 18 degrees or 17 degrees, to determine the beginning of the time of Isha. These parameters are then processed through a mathematical formula that considers the latitude, longitude, and altitude of a location. From these calculations, it can be known exactly when the night really started astronomically. Furthermore, the concept of midnight is calculated as the midpoint between the time of Maghrib and Fajr, which can also be precisely determined through astronomical data. Thus, *niṣf al-layl* is no longer abstract, but has a concrete and measurable value of time. This is very helpful in worship practices, especially for people who live in areas with significant variations in night length. In addition, modern technology such as falak software and digital applications are increasingly facilitating access to prayer time information. Therefore, astronomy makes a great contribution in improving the punctuality of worship. This integration also opens up opportunities for the development of new methods in determining prayer times.

This interdisciplinary approach also has important implications in responding to differences of opinion among scholars. With objective astronomical data, differences in interpretation of fiqh postulates can be approached with a more rational and measurable perspective. For example, the difference in determining the

final time limit of the main Isha can be reviewed by considering the actual duration of the night in a region. This allows for more contextual adjustments without having to abandon the basic principles of fiqh. In addition, this integration can also be a means of dialogue between the classical scientific tradition and modern science. Scholars and scientists can work together to come up with more comprehensive and applicable conclusions. Thus, differences of opinion are no longer seen as conflicts, but as intellectual property that can be synergized. This approach also encourages an open attitude towards the development of science. In the long run, this can strengthen the authority of scholarship in Islam. Therefore, the integration of fiqh and astronomy has strategic value in the development of contemporary Islamic law.

In practice, the results of this integration provide real benefits for Muslims in their daily lives. Accurate prayer timing helps the ummah in carrying out worship more disciplined and regular. In addition, religious institutions such as religious ministries or Islamic organizations can use astronomical data to compile a uniform prayer schedule. This is very important in maintaining the unity of worship practices in a diverse society. Furthermore, this integration also supports the use of digital technologies, such as location-based prayer time reminder applications. With this feature, Muslims can find out the time of Isha and the end limit in real-time. This is certainly very helpful, especially for those who have heavy activities. In addition, this approach also provides education to the public about the importance of understanding the scientific basis in worship. Thus, worship is not only carried out ritually, but also with intellectual awareness. This integration ultimately improves the quality of the religious experience. Therefore, the benefits are not only theoretical, but also practical.

More broadly, the integration between fiqh and astronomy shows the importance of an interdisciplinary approach in answering the challenges of the times. Many contemporary religious problems cannot be solved by just one discipline. Therefore, collaboration between different fields is an inevitable necessity. In the context of determining the timing of the Isha prayer, this integration succeeds in presenting a more complete and in-depth understanding. The Isha deadline is not only understood as a normative provision, but also as a natural phenomenon that has a scientific basis. This provides dual legitimacy that strengthens the faith of the people in carrying out worship. In addition, this approach also opens up space for innovation in Islamic studies. Researchers can develop new methods that are more accurate and relevant to the times. Thus, Islamic science can continue to develop without losing its traditional roots. This integration is also an example that religion and science can go hand in hand. In the end, this enriches the intellectual treasures of Islam while making a positive contribution to human civilization.

Fiqh and Astronomical Analysis of the Deadline for Isha Prayer

From the perspective of fiqh, the deadline for the Isha prayer shows that there is a legal construction that is not single, but is layered and flexible. The concept of dividing time into *ikhtiyārī* (main) and *jawāz* (permissible) reflects a normative

approach that emphasizes not only the validity of worship, but also the quality of its implementation. The hadith that states that the time of Isha lasts until midnight is understood by many scholars as a limit of virtue, not an absolute limit. This shows that fiqh does not only set the law rigidly, but also considers the ethical aspects of worship and the benefit of the ummah. On the other hand, the view of the Hanafi school that extends the time of Isha to dawn shows flexibility in dealing with certain conditions, such as difficulties or practical needs. This difference can be analyzed as a form of ijtihad dynamics that is rooted in variations in methods of understanding the evidence. In addition, the concept *of niṣf al-layl* in fiqh is not numerically defined in the text, thus opening up a space for interpretation that is then filled by other approaches, including astronomy. Thus, in fiqh, the deadline of Isha is not only a matter of the legality of time, but also reflects a hierarchy of values between virtue and ability. This analysis shows that fiqh has an adaptive character that allows integration with other disciplines. Therefore, the fiqh approach to the time of Isha needs to be understood comprehensively, not only textually but also contextually.

From the astronomical side, the concept of midnight (*niṣf al-layl*) can be analyzed as a fully measurable time phenomenon and based on the movement of celestial bodies, especially the sun. Night in an astronomical perspective begins at sunset (Maghrib) and ends at dawn (Fajr), both of which can be calculated with high accuracy using astronomical parameters. Midnight is then obtained by dividing the time interval in half, resulting in an objective and verifiable time point. This analysis shows that there is no one universal midnight time, but rather depends on geographical location and time of year. The variation in night length due to the declination of the sun causes dynamic changes in *the time of niṣf al-layl*, although in tropical regions such as Indonesia the variation is relatively moderate. The astronomical approach also allows integration with modern technologies, such as computing systems and prayer schedule apps, which are capable of real-time and location-specific calculations. Thus, astronomy provides a dimension of precision that is not found in a purely textual approach. This analysis shows that the concept of midnight is not only a normative abstraction, but also an empirical reality that can be measured scientifically. Therefore, the astronomical approach is very important in operationalizing the concept of time in daily worship practices. It also confirms that astronomy has a strategic role in bridging texts into actual contexts.

The synthesis between fiqh and astronomical analysis shows that the two approaches complement each other in determining the deadline for Isha prayers. Fiqh provides a normative framework that establishes the legal status and value of the primacy of time, while astronomy provides a measuring tool that allows for the practical application of these concepts. In this case, *niṣf al-layl* can be understood as a meeting point between norms and science, where the limits of virtue established in the hadith can be translated into measurable time through astronomical calculations. This integration also helps to reduce ambiguity in religious practice, especially in determining when the main time of Isha ends. In addition, this synthesis shows that

differences of opinion among scholars do not have to be contradicted, but can be understood as a spectrum of interpretations enriched by scientific data. In the modern context, this integrative approach is becoming increasingly important given the need for high time accuracy in various aspects of life. Thus, this combined analysis not only results in a more complete understanding, but also provides practical solutions that can be applied by the wider community. This approach also confirms that fiqh and astronomy have a close and mutually supportive relationship. Therefore, the determination of the deadline for Isha prayer is ideally carried out through an interdisciplinary approach that combines the two proportionally.

CONCLUSION

This study found that the determination of the direction of the qibla at the Great Mosque of Baiturrahim shows that there is a complex dynamic between the traditional methods used during the time of King Botutihe and the modern approach based on digital technology. The use of the Easy Qiblah application as a tool to determine the direction of the Qibla shows a fairly high level of accuracy with a relatively small deviation compared to the calculation of astronomical hisab. However, the results of the study show that this accuracy is not completely absolute because it is influenced by several main factors, namely the quality of the device's sensors, the calibration process, and the interference of the magnetic field in the surrounding environment. In addition, the difference between traditional and modern methods is also influenced by the limitations of astronomical knowledge in the past as well as the empirical approach used in determining the direction of the Qibla. These findings confirm that Qibla direction is a multidimensional phenomenon that does not only depend on technical and scientific aspects, but also involves historical and normative dimensions in religious practice. Thus, the use of the Easy Qiblah application not only serves as a technical tool, but also as a means to bridge the understanding between traditional and modern methods in determining the direction of the Qibla.

This research makes an important contribution to the development of astronomical studies, especially in understanding the integration between historical approaches and digital technology in determining the direction of the qibla. The added value of this research lies in its multidisciplinary approach that combines aspects of astronomy, history, and religious practices in one comprehensive analytical framework. In contrast to previous research that tended to focus on the technical aspects of measuring the direction of the Qibla, this study places the application of Easy Qiblah as part of the dialogue process between traditional and modern methods. In addition, the use of case studies on the Great Mosque of Baiturrahim provides a contextual empirical contribution in understanding the practice of determining the direction of the qibla in historic mosques. This research also reinforces the importance of integration between astronomical data and the use of digital technology in improving the accuracy of the direction of the Qibla. Thus, this research not only makes a theoretical contribution, but also has practical implications in

efforts to verify and refine the direction of the qibla in society. In addition, this study offers a new perspective in seeing the determination of the direction of the Qibla as a process that is not only technical, but also as part of the development of epistemology in the Islamic scientific tradition.

However, this study has some limitations that need to be considered. This study uses more descriptive and comparative approaches with measurement data limited to one location, so it does not fully describe the variation in conditions in various other regions. In addition, the use of the Easy Qiblah application is highly dependent on the device used, so the results of this study cannot be generalized to all types of smartphone devices. This study also did not involve measurements using high-precision instruments such as theodolite as the main comparator, so the level of accuracy produced is still relative. Therefore, further research is recommended to use a more empirical approach involving a variety of measurement methods, including direct observation and the use of professional tools. Follow-up research can also expand the scope of the study by comparing several historic mosques in different regions to obtain a more comprehensive picture. In addition, the development of an integrative model that combines astronomical approaches, digital technology, and fiqh studies is an important research direction to be conducted. Thus, it is hoped that further research can make a broader contribution in an effort to improve the accuracy of determining the direction of the qibla and strengthen the integration between science and religious practices in society.

REFERENCES

Agus Firmansyah & Fahmi Fatwa Rosyadi. (2021). Analisis Pendapat Imam Madzhab Arba'ah dalam Penentuan Batas Akhir Salat Isya dan Implikasinya terhadap Penetapan Jadwal Waktu Salat di Kota Bandung. Jurnal Riset Hukum Keluarga Islam, 1(2), 54–57. https://doi.org/10.29313/jrhki.v1i2.429

Ahmad Ridwan Al-faruq. (2013). Kecerahan Langit Malam Arah Zenit di Observatorium Bosscha dan Analisis Awal Waktu Subuh dan Isya Menggunakan Sky Quality Meter. Kecerahan Langit Malam Arah Zenit Di Observatorium Bosscha Dan Analisis Awal Waktu Subuh Dan Isya Menggunakan Sky Quality Meter, 3(Sky Brightness).

Al Hasanah, S. (2020). Mengenal 5 Kaidah Umum Dalam Hukum Fiqh. SMPI Al Hasanah Bengkulu.

Atkinson, J. (2016). Academic libraries and research support: An overview. In Quality and the Academic Library: Reviewing, Assessing and Enhancing Service Provision. https://doi.org/10.1016/B978-0-12-802105-7.00013-0

Atmanto, N. E. (2012). Relevansi Konsep Fajar dan Senja dalam Kitab Al-Qanun Al-Mas'udi Bagi Penetapan Waktu Salat Isya dan Subuh. Analisa, 19(1).

Farah, L. A. (2020). Waktu Shalat Ashar, Maghrib dan Isya' Perspektif Hadis. ELFALAKY, 4(1). https://doi.org/10.24252/ifk.v4i1.14167

Firdaus, B. (2017). Kemacetan dan Kesibukan Sebagai Alasan Qashar dan Jama' Shalat. JURNAL HUKUM ISLAM, 02.

Hajarchicago. (2018). Metode Jakim Dan Badan Hisab & Rukyat Dalam Menetapkan Waktu Shalat. Lembaga Penelitian Dan Pengabdian Pada Masyarakat, 1(1).

Herianto, Arif, S., & Kosim, M. (2022). Qadha Shalat Wajib dalam Perspektif 4 Mazhab. Jurnal Pendidikan Tambusai, 6(2).

Jannah, S. (2020). Penentuan Waktu Salat Magrib, Isya, Dan Subuh (Vol. 21, Issue 1).

Moleong, L. J. (2016). Metodologi Penelitian Kualitatif (35th ed.). PT Remaja Rosdakarya.

Neli Maryam Sanjung, 180103062. (2025). Batas Akhir Waktu Sholat Menurut 4 Imam Mazhab. Batas Akhir Waktu Sholat Menurut 4 Imam Mazhab, 1(1), 1–27.

Nurqolbi, Y., & Noosy, A. (2024). Assessment of Abyadh Syafaq at the Early Time of Isha Astrophotography Method. ELFALAKY, 8(1). https://doi.org/10.24252/ifk.v8i1.47862

Putra, S., & Staines, M. (2026). Dynamics of the Isbat Session and Differences in Determination The Beginning of Ramadan 1447 H in Indonesia. ALFALAK: Journal of Islamic Astronomy, 1(1), 11-24.

Qulub, S. T., & Sanuri, S. (2024). Aspek Maqāṣid al-Kulliyyah dan al-Juziyyah dalam Penetapan Awal Waktu Shalat Shubuh dan Isya'. Al-Qanun: Jurnal Pemikiran Dan Pembaharuan Hukum Islam, 27(2).

Ramadhanti, W., Abbas, E. W., & Jumriani, J. (2020). Religious Activities in The Great Mosque Al Munawwarah Banjarbaru. The Kalimantan Social Studies Journal, 2(1). https://doi.org/10.20527/kss.v2i1.2466

Rizal, M., Putra, R. S., Haq, N. N., & Al-Faruq, U. (2024). Pemahaman Shalat Jama' dan Qashar dalam Islam. Jurnal Ilmiah Multidisiplin Terpadu, 8(12).

Safrida, L., & Machzumy, M. (2022). Analisis Astronomical Twilight Sebagai Tanda Penentuan Awal Waktu Salat Isya. Astroislamica: Journal of Islamic Astronomy, 1, 47–72. https://doi.org/10.47766/astroislamica.v1i1.687

Sakirman, S. (2018). Metodologi Qiyas Dalam Istinbath Hukum Islam. YUDISIA: Jurnal Pemikiran Hukum Dan Hukum Islam, 9(1), 37–55. https://doi.org/10.21043/yudisia.v9i1.3672

Sakirman, S., Jamil, A., & Ardliansyah, M. F. (2024). Integration of Fiqh and Science in Determining Fajr Time in Indonesia. KEDJATI Journal of Islamic Civilization, 1(2), 117–135.

Shikhovtsev, A. Y. (2026). Review of Crescent Visibility: The Role of Islamic Astronomy in Determining the Hijri Calendar. ALFALAK: Journal of Islamic Astronomy, 1(1), 1-11.

SKF, D. H.-P., & 2016, undefined. (2016). Pengukuran Kecerahan Langit Malam Arah Zenit Untuk Penentuan Awal Waktu Fajar. Ifory.Id.

Sugiyono. (2010). Model Penelitian Kuantitatif. Alfabeta.

Syarif, M. R., Sakirman, S., & Syarif, M. F. (2025). A Semantic Literature Review on Crescent Visibility: Trends, Models, and Implications for the Islamic Calendar. Al-Hilal: Journal of Islamic Astronomy, 7(1), 67-88.

Wahyudin Darmalaksana. (2020). Metode Penelitian Kualitatif Studi Pustaka dan Studi Lapangan. Pre-Print Digital Library UIN Sunan Gunung Djati Bandung.

Yusuf, M. (2014). Metode Penelitian Kuantitatif, Kualitatif & Penelitian Gabungan. Penerbit Kencana.

Zainal, A. A. Z., Latuconsina, M., & Akmal, M. (2023). Analisis Relevansi Syafaq Ahmar Terhadap Penentuan Akhir Waktu Shalat Magrib Perspektif Ilmu Falak. HISABUNA: Jurnal Ilmu Falak, 3(3). https://doi.org/10.24252/hisabuna.v3i3.35619

Zainuddin, Z. (2020). Posisi Matahari dalam Menentukan Waktu Shalat Menurut Dalil Syar'i. ELFALAKY, 4(1). https://doi.org/10.24252/ifk.v4i1.14166