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Religious and Spiritual Changes After Near-Death Experience: A Survey-Based Study Among Urban Indonesians

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Abstract

Near-death experiences (NDEs) are profound psychological events known to catalyze significant spiritual transformation, though most research has been conducted in Western contexts. This study investigated perceived changes in spirituality or religiosity following NDEs among adults residing in Jakarta, Indonesia (N = 402 NDErs; 70% female; M_{age} = 23, SD = 7.93). This population is crucial as spirituality or religiosity are deeply intertwined yet understudied here. Gender differences were non-significant in both continuous ($t(400) = 0.43$, $p = 0.671$) and categorical analyses ($\chi^2(2) = 1.03$, $p = 0.597$). Crucially, age emerged as a significant moderator. Early adulthood showed the highest rate of post-NDE increase, significantly exceeding adolescence ($z = -2.86$, $p = 0.004$). Conversely, middle adulthood showed higher baseline levels but greater post-NDE stability. Furthermore, pre-existing spirituality or religiosity significantly predicted post-NDE changes ($r = 0.174$, $p < 0.001$). Interestingly, non-religious individuals were paradoxically overrepresented among those reporting a decrease ($\chi^2(4) = 15.10$, $p = 0.004$). These findings indicate that age and pre-existing levels of spirituality or religiosity potentially moderate the relationship between NDEs and changes in spiritual or religious levels following NDEs, highlighting the role of developmental and cognitive factors in transformative experiences. This study suggests that NDEs are associated with increased spirituality or religiosity among Indonesians, consistent with the broader global literature on their transformative aftereffects.

Keywords: near-death experience; NDE; spirituality; religiosity; Indonesia; psychology of religion

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Academic Editor: Eleonora Papaleontiou-Louca

Received: 17 October 2025
Revised: 26 December 2025
Accepted: 9 March 2026
Published: 12 March 2026

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1. Introduction

Near-Death Experiences (NDEs) are profound psychological events typically occurring in the context of life-threatening circumstances, characterized by a constellation of extraordinary subjective experiences that transcend ordinary consciousness (Tassell-Matamua 2013). The phenomenology of NDEs is complex and multifaceted. Greyson (2006) classifies these features into four distinct dimensions: cognitive components reflecting changes in thought processes; affective components involving profound emotional states; paranormal features related to apparent psychic phenomena; and transcendental components involving apparent otherworldly realms or beings. This foundational framework finds strong corroboration in subsequent systematic analyses. For instance, Hashemi et al. (2023) identified a highly convergent set of thematic categories, effectively reorganizing and refining Greyson's dimensions. Their supernatural category, defined by out-of-body experiences

and metaphysical perceptions, directly corresponds to Greyson's paranormal and transcendental dimensions. Similarly, their spiritual and religious category, encompassing meetings with deceased or divine figures and a sense of universal oneness, aligns with the core aspects of Greyson's transcendental dimension. The cognitive and emotional categories identified by Hashemi et al. (2023) further validate and mirror the distinct cognitive and affective components described by Greyson (2006).

While the specific expression of certain elements can be influenced by an individual's cultural and religious background, the underlying architecture of the experience, including altered states of consciousness and feelings of transcendence, demonstrates remarkable universality across cultures (Hashemi et al. 2023). The significance of NDEs extends beyond the anomalous event itself, as they frequently occur during extreme trauma or terminal illness and are increasingly recognized in clinical and psychological literature for their profound and lasting impact on an individual's psyche (Barreto 2025). A particularly salient outcome noted in research is their capacity to catalyze significant positive changes in attitudes toward life and death, often fostering a reduction in suicidal ideation and, most notably, prompting a deepened sense of spirituality and religiosity (Barreto 2025; Greyson 2006). This established link between NDEs and post-experience spiritual transformation forms the critical foundation for the current study.

Understanding these post-NDE changes requires a clear conceptual distinction between spirituality and religiosity. Spirituality is commonly understood as a personal and experiential orientation toward the sacred, involving a search for meaning, purpose, and connection with a transcendent or greater reality beyond ordinary experience that inspires and shapes one's inner life and behavior (Pargament and Mahoney 2009; Pfeiffer 2008). It may also encompass belief systems that provide frameworks for understanding fundamental questions of life, such as notions of right and wrong, good and evil, and beliefs about God or life after death, and often extends beyond the boundaries of formal religious doctrine (King and Koenig 2013). Religiosity, in contrast, refers to beliefs, practices, and commitments that are formally structured and embedded within organized religious traditions, including adherence to doctrines, participation in rituals, and involvement in religious institutions (Zinnbauer et al. 1997). Together, spirituality and religiosity contribute to meaning-making by providing frameworks through which individuals interpret their experiences and cope with life's challenges (Lysne et al. 2010). Despite their conceptual distinction, previous studies suggest that spirituality and religiosity may be experienced as interrelated dimensions of individuals' lives, particularly within Muslim cultural contexts where religious identity is closely tied to everyday meaning-making and where the polarization of these constructs as mutually exclusive has been cautioned against (Joshanloo 2012).

The profound impact of NDEs extends beyond the immediate event, culminating in significant and lasting aftereffects, particularly in the realm of spirituality. Empirical research has consistently demonstrated a strong positive association between NDEs and subsequent spiritual growth. For instance, studies by Khanna and Greyson (2014b, 2014a) found that individuals who reported NDEs scored significantly higher on measures of spiritual well-being and daily spiritual experiences compared to those who had come close to death without an NDE. Moreover, the depth of these spiritual changes was positively correlated with the depth of the NDE itself (Greyson and Khanna 2014).

Prior research has also highlighted the complexity of post-NDE changes. Tassell-Matamua and Steadman (2017) reported that transformative outcomes were more strongly linked to the experiential features of NDEs (e.g., cognitive, affective, and transcendental elements) than to their circumstantial characteristics. While Western studies have documented substantial spiritual shifts following NDEs, how such changes are perceived, integrated,

and articulated within non-Western cultural contexts—where spirituality and religiosity are often closely intertwined—remains insufficiently understood (Hashemi et al. 2023).

To begin addressing this gap, it is instructive to examine findings from Muslim-majority countries, which offer a crucial comparative perspective on how cultural and religious frameworks shape the NDE phenomenon beyond Western contexts. Existing literature on NDEs among Muslim populations reveals important insights into the cross-cultural universality and spiritual aftereffects of these phenomena. Multiple studies conducted in Iran have explored NDEs using various methodologies, from qualitative phenomenological approaches to case studies and descriptive–analytical designs. For instance, Fracasso et al. (2010) found that both the content and aftereffects of NDEs experienced by Iranian Muslims were quite similar to those reported by Westerners, suggesting a cross-culturally universal and transpersonal phenomenon. Similarly, Khoshab et al. (2020) conducted in-depth interviews with Iranian Muslim CPR survivors and reported that their NDEs were highly comparable to those experienced by survivors in Western countries with different theistic religions.

In terms of aftereffects, these studies identify a range of profound changes. Ghasemiannejad et al. (2014) found that participants reported significant positive changes in attitudes, values, and spiritual beliefs, as well as an increase in gratitude, following their NDEs. Jahromi (2021) further categorized these extensive and long-lasting aftereffects into four main themes: social, religious–spiritual, emotional/psychic, and the acquisition of transcendental abilities. While many of these aftereffects were positive, the same study noted that these changes could also cause numerous problems for experiencers in their personal lives and social relationships. The case report by Jahromi and Imaninasab (2018) detailed a distressing NDE experienced by an Iranian Shiite Muslim man and its aftereffects, including challenges in disclosing the event to others. Research by Jahromi and Long (2020) also highlighted that while NDEs share a predominant similarity with Western NDEs in content and aftereffects, they may also incorporate culturally specific features. Expanding on this, a theoretical analysis by Etemadinia and Jahromi (2022) argued that NDE elements are largely consistent with Shia Islamic eschatology, although some conflicts and inconsistencies exist and warrant further scrutiny. Collectively, these studies on NDEs in Muslim populations demonstrate a consistent pattern of profound spiritual and personal transformation that is both universal and culturally resonant. While these studies provide crucial evidence from Muslim-majority nations like Iran, the question of how NDEs and their transformative aftereffects manifest within the unique socio-cultural and religious tapestry of Indonesia, the world's largest Muslim population, remains underexplored and necessitates further investigation.

Literature on NDEs in Indonesia, while limited, provides unique insights into how these phenomena manifest within a predominantly Muslim context, revealing both universal and culturally specific elements. Several qualitative studies have employed phenomenological approaches to explore the psychological dynamics and aftereffects of NDEs in diverse Indonesian populations. For instance, Molina (2015) conducted a phenomenological study on an adult male, revealing a structured NDE experience with four main themes, including supernatural events and the meaning given to the experience. Muttaqin and Moordiningsih (2019) similarly utilized a descriptive narrative analysis with six participants who survived life-threatening illnesses or accidents. Their findings suggest that NDEs involve cognitive, transcendental, and emotional elements, leading to aftereffects such as a newfound sense of sincerity, acceptance, and reduced fear of death. Furthering this, a study by Fakhrurrozi and Nurwahidin (2022) with three participants found that spirituality consistently moved in a positive direction after an NDE. This study also revealed three novel NDE episodes not previously documented in global literature, including visions of the end of the world, visits to holy and historical sites of various religions, and acts

of worship. This finding highlights a distinct cultural component that differs from many Western reports. Additionally, a study on individuals with COVID-19 by Himawanti and Faiq (2023) explored mystical experiences, finding that after NDEs, individuals experienced a comprehensive reconstruction of their personal beliefs and values regarding life and death, particularly their relationship with God. They also described mystical experiences of communicating with specific religious figures and spirits of deceased people. These studies collectively demonstrate that while NDEs in Indonesia share core features with global accounts, they are uniquely shaped by local religious and cultural frameworks, profoundly influencing an individual's spiritual and personal beliefs.

A synthesis of the existing literature reveals a consistent narrative: NDEs act as a catalyst for profound spiritual transformation across cultures (Greyson and Khanna 2014; Khanna and Greyson 2014a). This transformative potential is evident in Muslim populations, as shown in Iranian studies, while also being uniquely filtered through local cultural and religious lenses (Etemadinia and Jahromi 2022; Jahromi and Long 2020). The nascent research from Indonesia corroborates this pattern of universal yet culturally inflected experiences, with studies documenting distinct phenomenological features and positive spiritual shifts (Fakhrurrozi and Nurwahidin 2022; Himawanti and Faiq 2023).

However, a critical gap persists. The Indonesian literature, while insightful, remains limited in scope and scale, primarily consisting of small-sample qualitative studies. To date, no quantitative study has examined how individuals in Indonesia perceive changes in their spiritual or religious life following near-death experiences, particularly within urban adult populations. While prior Western research has documented increases in spirituality following NDEs, without a corresponding rise in religiosity (Tassell-Matamua and Steadman 2017), it remains unclear how such post-NDE changes are perceived and integrated within cultural contexts where spirituality and religiosity are deeply intertwined. Accordingly, the present study aims to conduct an exploratory investigation of perceived spiritual–religious change following NDEs among urban Indonesian adults. Therefore, three specific research objectives (RO) were formulated as follows:

RO1: To describe the perceived levels of spirituality or religiosity, the prevalence of NDEs, and perceived changes in spirituality or religiosity following NDEs, as well as their distribution across demographic characteristics (i.e., gender, religion, and age group).

RO2: To describe patterns of perceived change in spirituality or religiosity following NDEs (i.e., increase, decrease, or no change).

RO3: To examine whether perceived changes in spirituality or religiosity following NDEs vary across demographic characteristics (i.e., age group and gender).

2. Materials and Methods

2.1. Participants

This study involved 1013 participants ranging in age from 16 to 55 years and older. A non-probability sampling strategy with a convenience sampling approach was employed. The inclusion criteria required participants to reside in Jakarta, have internet access, and be able to participate independently.

2.2. Measures

This study employed three single-item self-report measures to assess perceived levels of spirituality or religiosity, the occurrence of NDEs, and perceived spiritual–religious change following an NDE. This approach aligns with prior large-scale survey research on NDEs and spiritual transformation, which has relied on brief self-report items to capture subjective and phenomenological aspects of spirituality or religiosity change (del Castillo et al. 2025). The first item measured participants' self-perceived level of spirituality

or religiosity ("How spiritual or religious would you describe yourself?"). Responses were recorded on a five-point Likert scale (1 = "Not at All"; 2 = "Little"; 3 = "Medium"; 4 = "Quite"; 5 = "Very"), with higher scores indicating higher perceived levels of spirituality or religiosity.

The second item asked whether participants had ever experienced an NDE ("Have you ever had a 'near-death experience' in your life?"). To ensure a shared understanding of the term near-death experience, the survey included a brief clarification: "by this, we mean a life- threatening situation in which you were close to death and had extraordinary experiences. Examples of such experiences are Acceleration of your experience of time or thoughts, recalling events of your life (e.g., as if in a movie), deep understanding of who you are, feeling of harmony, perception of deceased or spiritual beings, feeling of being separated from your own body, perception of a bright light or a border to the afterlife. Have you ever had a 'near-death experience' in your life that involved any of the above examples or other extraordinary experiences?". Responses were recorded dichotomously (Yes or No). Each response option was accompanied by instructions for subsequent participation: participants who answered Yes—indicating that they had experienced an NDE—were directed to complete the next item, whereas participants who answered No—indicating that they had never experienced an NDE—were instructed to discontinue their participation at this point.

The third item, presented only to those who reported having experienced an NDE, assessed perceived changes in spirituality or religiosity following the event ("Did your spirituality or religiosity increase or decrease in the first six months after your near-death experience?"). Responses were recorded on a five-point Likert scale (1 = "Strongly Decreased"; 2 = "Decreased"; 3 = "Remain the Same"; 4 = "Increased"; 5 = "Strongly Increased"), with higher scores reflecting greater perceived increases in spirituality or religiosity after experiencing an NDE.

Although each construct in this study was assessed using a single-item measure, this approach was considered appropriate given the study's exploratory and descriptive orientation. The use of single-item indicators allowed participants to respond intuitively to complex experiential concepts, such as religiosity and spirituality, without excessive cognitive load. Moreover, as the focus of this research was to capture self-perceived changes following NDEs, rather than to establish a comprehensive psychometric model, single-item assessments were sufficient to identify general tendencies and patterns. This approach enabled efficient data collection while maintaining relevance to the study's phenomenological scope.

2.3. Procedure

This study employed a non-experimental cross-sectional design and was conducted as part of a larger project investigating political participation for the 2024 presidential election in Indonesia. The survey on NDEs was included as an additional set of questions administered to participants in the main study. The survey was administered as a digital questionnaire using Google Forms, which participants could access and complete online via smartphones or computers at their convenience. Recruitment materials were disseminated through digital flyers broadcasted on social media platforms, inviting eligible individuals to participate by following the survey link provided in the broadcast messages.

The collected data were quantitatively analyzed using descriptive statistics in Microsoft Excel (version 16.106.3). Responses were categorized into two types of scores: those treated as nominal measures and those treated as ordinal measures. Nominal measures included responses to the survey item assessing whether participants had ever experienced an NDE, as well as demographic information such as gender, religion, and participant age

that grouped into five categorical ranges: 16–24 years, 25–34 years, 35–44 years, 45–54 years, and 55 years and older.

Ordinal measures were derived from the first and third survey items. For the first item, which assessed participants' self-perceived level of spirituality or religiosity, scores of 4 and 5 were interpreted as indicating high levels of spirituality or religiosity, a score of 3 as indicating a moderate level, and scores of 1 and 2 as indicating low or no spirituality or religiosity. For the third item, which assessed perceived changes in spirituality or religiosity after experiencing an NDE, scores of 4 and 5 were interpreted as reflecting an increase in spirituality or religiosity, a score of 3 as reflecting no change, and scores of 1 and 2 as reflecting a decrease.

Furthermore, inferential analyses were conducted on the survey data using R version 2025.05 (R Core Team 2025). More specifically, the item asking whether participants had ever experienced an NDE functioned as a screening tool. Only data from participants who reported having experienced an NDE were included in the inferential analysis. The inferential analyses performed included a correlation analysis of the scores from the first and third survey items, which measured perceived levels of spirituality or religiosity and perceived changes in spirituality or religiosity following NDEs, respectively, as well as participant age and gender. In addition to correlation analysis, an independent samples *t*-test was conducted to examine the significance of differences in the scores of the first and third items based on participant gender. A one-way ANOVA was also performed to test for significant differences in the scores of the first and third items across participant age groups.

For the correlation analysis, *t*-test, and one-way ANOVA, the scores from the first and third survey items were used as scale scores on a 1–5 point range, which were treated as interval measures. Gender was coded to be treated as a nominal measure. Regarding participant age, it was first grouped according to developmental norms, and each stage was coded numerically to be treated as a nominal measure. The resulting groups were "Adolescence" for participants aged 16 to 20 years, coded as 1; "Early Adulthood" for participants aged 21 to 39 years, coded as 2; and "Middle Adulthood" for participants aged 40 to 59 years, coded as 3.

Additionally, this study also conducted contingency table analyses on the data obtained from participants who reported NDEs. This analysis aimed to determine whether the distribution of one variable was dependent on the distribution of another variable. In this study, contingency table analyses were performed on several variable pairs. These pairs included the scores from the first and third survey items; the first survey score and gender; the third survey score and gender; the first survey score and age group; and the third survey score and age group. For the contingency table analysis, the scores from the first and third survey items were treated as ordinal measures based on the three descriptive groups mentioned previously. Similarly, the age variable was treated as an ordinal measure based on the developmental norm age groups, as previously described.

3. Results

The sample was predominantly female (73.7%), and the vast majority of participants (98%) reported being Muslim. In addition, most participants were between 16 and 24 years of age (78.3%). A summary of participants' demographic characteristics, perceived levels of spirituality or religiosity, experiences of NDEs, and perceived changes in spirituality or religiosity following an NDE is presented in Table 1.

Table 1. Summary of Participant' Demographic Characteristic, Spirituality or Religiosity, Near-Death Experience, and Spirituality or Religiosity After NDE.

Demographic Variables	Estimated Population Percentage		Participant' Spirituality or Religiosity			NDE		Spirituality or Religiosity After NDE			
	N	Percentage	Spiritual or Religious	Moderate	Not Spiritual or Religious	Yes	No	N	Increased	No Change	Decreased
Total Participant	1013	100%	25.9%	50.6%	23.5%	39.7%	60.3%	402	54.5%	36.8%	8.7%
Gender											
Male	266	26.3%	32.0%	44.4%	23.7%	50.0%	50.0%	133	54.9%	34.6%	10.5%
Female	747	73.7%	23.7%	52.9%	23.4%	36.0%	64.0%	269	54.3%	37.9%	7.8%
Religion											
Islam	993	98%	25.6%	50.9%	23.6%	39.6%	60.4%	393	54.5%	36.6%	8.9%
Catholic Christians	13	1.3%	14.3%	14.3%	71.4%	42.9%	57.1%	6	66.7%	33.3%	0.0%
Protestant Christians	7	0.7%	46.2%	38.5%	15.4%	38.3%	61.7%	3	50.0%	50.0%	0.0%
Age											
16–24	793	78.3%	22.3%	55.1%	22.6%	38.4%	61.7%	304	53.3%	37.8%	8.9%
25–34	140	13.8%	31.4%	36.4%	32.1%	46.4%	52.9%	65	70.7%	20.7%	8.6%
35–44	40	3.9%	52.5%	35.0%	12.5%	35.0%	62.5%	14	60.0%	33.3%	6.7%
45–54	28	2.8%	46.4%	25.0%	28.6%	42.9%	57.1%	12	25.0%	75.0%	0.0%
55 and older	12	1.2%	58.3%	33.3%	8.3%	58.3%	41.7%	7	40.0%	40.0%	20.0%

https://doi.org/10.3390/rel17030355

In terms of perceived religiosity or spirituality, 25.9% of participants reported being spiritual or religious, 50.6% reported a moderate level, and 23.5% reported being not spiritual or religious. Regarding NDEs, 39.7% of participants reported having had an NDE, while 60.3% reported no such experience. Among those who reported an NDE (n = 402), 54.5% perceived an increase in their spirituality or religiosity in the six months following the event, 36.8% reported no change, and 8.7% reported a decrease.

Gender differences showed that males were more likely to identify as spiritual or religious (32.0%) compared to females (23.7%). However, males were more likely than females to report having experienced an NDE (50.0% vs. 36.0%). Among participants with NDEs, both males (54.9%) and females (54.3%) reported a similar likelihood of perceiving an increase in spirituality or religiosity.

Religious affiliation revealed that Muslims mirrored the overall distribution (25.6% spiritual or religious, 50.9% medium, 23.6% not spiritual or religious), while Catholic Christians were more likely to report being not spiritual or religious (71.4%). Among Protestant Christians, nearly half (46.2%) reported being spiritual or religious. With respect to NDE-related changes, Muslims reported similar patterns to the total sample, whereas Catholic Christians and Protestant Christians—though represented in very small numbers—showed higher tendencies toward stability or increases in spiritual or religious after an NDE.

Age-related patterns indicated that older participants were more likely to describe themselves as spiritual or religious. For example, 58.3% of participants aged 55 and older identified as spiritual or religious compared with only 22.3% in the 16–24 age group. Similarly, older age groups displayed distinct patterns in perceived changes after an NDE. Participants aged 25–34 and 35–44 were more likely to report increased spirituality or religiosity after an NDE (70.7% and 60.0%, respectively), whereas those aged 45–54 were most likely to report no change (75.0%). Among participants aged 55 and older, 40.0% reported an increase, 40.0% no change, and 20.0% a decrease.

Furthermore, inferential analysis was conducted to examine demographic patterns among participants who reported NDEs (n = 402). Both continuous and categorical analyses were employed to provide comprehensive insights into how gender and age groups relate to both perceived levels of spirituality or religiosity and perceived changes in spirituality or religiosity following NDEs.

Bivariate correlations were examined to assess the relationships between age, gender, and spirituality or religiosity measures, with the correlation matrix presented in Table 2. A statistically significant positive correlation emerged between age and perceived levels of spirituality or religiosity, $r(400) = 0.112$, $p = 0.023$, indicating that older participants reported higher baseline spiritual or religious levels. This relationship strengthened slightly for perceived spirituality or religiosity changes following NDEs, $r(400) = 0.121$, $p = 0.014$, suggesting that age remains a modest but significant factor in spiritual or religious outcomes following NDEs. However, gender did not correlate significantly with either perceived levels of spirituality or religiosity ($r = 0.089$, $p = 0.076$) or perceived spirituality or religiosity changes following NDEs ($r = 0.021$, $p = 0.671$).

Most notably, a significant positive correlation was observed between perceived levels of spirituality or religiosity and perceived spirituality or religiosity changes following NDEs, $r(400) = 0.174$, $p < 0.001$, indicating that individuals with higher baseline spiritual or religious levels tended to report greater spirituality or religiosity increases following their NDEs. The coefficient of determination ($r^2 = 0.030$) suggests that approximately 3% of the variance in perceived spirituality or religiosity changes following NDEs can be accounted for by perceived levels of spirituality or religiosity.

Table 2. Correlation Matrix for Demographic and Religiosity Variables (N = 402).

Variable	1	2	3	4
1. Age	—			
2. Gender	0.162 **	—		
3. Participant' Religiosity	0.112 *	0.089	—	
4. Religiosity After NDE	0.121 *	0.021	0.174 ***	—

Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Contingency analysis revealed a significant relationship between perceived levels of spirituality or religiosity and perceived spirituality or religiosity changes following NDEs, $\chi^2(4, N = 402) = 15.10$, $p = 0.004$. The association was moderate in strength (Cramer's V = 0.14). Analysis of standardized residuals identified non-spiritual or religious participants as significantly overrepresented in the "Decreased" category (standardized residual = 2.52), with observed frequencies substantially exceeding expected values (14 observed vs. 7.23 expected), while other groups showed proportional distributions. This indicates that baseline spiritual or religious orientation moderates NDE-related transformation, with non-spiritual or religious individuals demonstrating distinct response patterns. The results of the contingency analysis involving perceived spirituality or religiosity and changes in spirituality or religiosity following NDEs is presented in Table 3.

Table 3. Contingency Analysis.

Participant' Religiosity	Spirituality or Religiosity After NDE		
	Increased [n (exp)]	No Change [n (exp)]	Decreased [n (exp)]
Spiritual or Religious	72 (64.83)	37 (43.81)	10 (10.36)
Moderate	114 (108.96)	75 (73.63)	11 (17.41)
Not Spiritual or Religious	33 (45.22)	36 (30.56)	14 (7.23) *

Note. * $p < 0.05$.

Gender differences in perceived levels of spirituality or religiosity and perceived spirituality or religiosity changes following NDEs were examined using independent samples *t*-tests and contingency table analyses. For perceived levels of spirituality or religiosity, male participants ($M = 3.20$, SD = 0.84) reported slightly higher baseline spirituality or religiosity compared to females ($M = 3.05$, SD = 0.78), though this difference approached but did not reach statistical significance, $t(400) = 1.78$, $p = 0.076$. The effect size was small (Cohen's d = 0.19), with the 95% confidence interval for the mean difference spanning from −0.02 to 0.32, indicating uncertainty about the direction of this marginal effect. The results of the independent samples *t*-tests examining gender differences are presented in Table 4.

Table 4. Gender Differences in Spirituality or Religiosity Before and After Near-Death Experiences.

Gender	n	M (SD)		Mean Difference [95% CI]
		Participant' Spirituality or Religiosity	Spirituality or Religiosity After NDE	
Male	133	3.20 (0.84)	3.52 (0.84)	0.15 [−0.02, 0.32]
Female	269	3.05 (0.78)	3.48 (0.76)	0.04 [−0.13, 0.20]

Following NDEs, both genders reported perceived increases in spirituality or religiosity, but the difference between males ($M = 3.52$, SD = 0.84) and females ($M = 3.48$, SD = 0.76) was non-significant, $t(400) = 0.43$, $p = 0.671$, with a negligible effect size (Cohen's d = 0.05). The similarity in perceived spirituality or religiosity changes following NDEs suggests that NDEs may have an equalizing effect on spiritual or religious transformation across genders.

The results of the contingency analyses examining gender in relation to perceived spirituality or religiosity and spirituality or religiosity changes following NDEs are presented in Table 5. Contingency table analysis revealed no significant association between gender and perceived spirituality or religiosity changes following NDEs, $\chi^2(2, N = 402) = 1.03$, $p = 0.597$. Cramer's V effect size was 0.05, indicating a very weak relationship. The expected frequency distribution showed comparable patterns across change categories, where both males and females were proportionally represented in the "Increased" (72.46 vs. 146.54), "Decreased" (11.58 vs. 23.42), and "No Change" (48.97 vs. 99.03) categories. Similarly, analysis of perceived levels of spirituality or religiosity categories showed no significant gender differences, $\chi^2(2, N = 402) = 5.01$, $p = 0.082$, though this approached marginal significance with a small effect size (Cramer's V = 0.11). The distribution across "Spiritual or Religious", "Moderate", and "Not Spiritual or Religious" categories was proportionally similar between genders. Collectively, these findings indicate that gender does not significantly influence either baseline or the transformation experienced following NDEs within this sample.

Table 5. Contingency Analysis.

	Participant' Religiosity		
Gender	**Spiritual or Religious [n (exp)]**	**Moderate [n (exp)]**	**Not Spiritual or Religious [n (exp)]**
Male	49 (39.37)	59 (66.17)	25 (27.46)
Female	70 (79.63)	141 (133.83)	58 (55.54)
	Spirituality or Religiosity After NDE		
Gender	**Increased [n (exp)]**	**No Change [n (exp)]**	**Decreased [n (exp)]**
Male	73 (72.46)	46 (48.97)	14 (11.58)
Female	146 (146.54)	102 (99.03)	21 (23.42)

Age-related patterns in perceived levels of spirituality or religiosity and perceived spirituality or religiosity changes following NDEs were examined using one-way ANOVA and contingency table analyses. For perceived levels of spirituality or religiosity, a significant main effect of age group was found, $F(2, 399) = 3.83$, $p = 0.023$, with a small effect size ($\eta^2 = 0.019$). Non-parametric Kruskal–Wallis test corroborated this finding, $H(2) = 8.39$, $p = 0.015$, with a rank-based effect size of $\varepsilon^2 = 0.021$. Post hoc Dunn's tests revealed that Middle Adulthood participants had significantly higher baseline spirituality or religiosity compared to both Adolescence ($z = -2.90$, $p = 0.004$, rrb = 0.34) and Early Adulthood groups ($z = -2.54$, $p = 0.011$, rrb = 0.30), while no significant difference emerged between Adolescence and Early Adulthood ($p = 0.512$). The results of the one-way ANOVA are presented in Table 6.

Table 6. Age Group Differences in Spirituality or Religiosity Before and After NDE.

Measure	**F(2, 399)**	***p***	**η^2**	**Post Hoc Differences**
Participant' Spirituality or Religiosity	3.83	0.023	0.019	M > A **, M > E *
Spirituality or Religiousity After NDE	4.34	0.014	0.021	E > A **

Note. A = Adolescence, E = Early Adulthood, M = Middle Adulthood; * $p < 0.05$, ** $p < 0.01$.

Following NDEs, the age group effect remained significant, $F(2, 399) = 4.34$, $p = 0.014$, $\eta^2 = 0.021$, with similar effect size magnitude. However, the pattern of post hoc differences shifted notably. Dunn's comparisons indicated that Early Adulthood participants now demonstrated significantly higher post-NDE spirituality or religiosity than Adolescence ($z = -2.86$, $p = 0.004$, rrb = 0.16), while Middle Adulthood no longer differed significantly from either Adolescence ($p = 0.893$) or Early Adulthood ($p = 0.230$).

The results of the contingency analyses examining age group in relation to perceived spirituality or religiosity and post-NDE changes in spirituality or religiosity are presented in Table 7. Contingency table analysis of categories for perceived levels of spirituality or religiosity showed a significant association with age groups, $\chi^2(4, N = 402) = 12.05$, $p = 0.017$, Cramer's V = 0.12. The distribution revealed proportional differences across spirituality or religiosity categories, with Middle Adulthood showing expected patterns toward higher spirituality or religiosity. Analysis of standardized residuals revealed that Middle Adulthood participants were significantly overrepresented in the "Spiritual or Religious" category (standardized residual = 2.75), while other age groups showed proportional distributions across religiosity levels. This finding suggests that while age and spirituality or religiosity are associated, the relationship is driven primarily by a notable increase in spirituality or religiosity during middle adulthood.

Table 7. Contingency Analysis.

Participant' Religiosity			
Age Group	**Spiritual or Religious [n (exp)]**	**Moderate [n (exp)]**	**Not Spiritual or Religious [n (exp)]**
Adolescence	58 (65.42)	116 (109.95)	47 (45.63)
Early Adulthood	47 (46.77)	78 (78.61)	33 (32.62)
Middle Adulthood	14 (6.81)	6 (11.44)	3 (4.75)
Spiritual or Religious After NDE			
Age Group	**Increased [n (exp)]**	**No Change [n (exp)]**	**Decreased [n (exp)]**
Adolescence	110 (120.40)	88 (81.36)	23 (19.24)
Early Adulthood	100 (86.07)	47 (58.17)	11 (13.76)
Middle Adulthood	9 (12.53)	13 (8.47)	1 (2.00)

For categories of perceived spirituality or religiosity changes following NDEs, a significant relationship with age groups emerged, $\chi^2(4, N = 402) = 11.05$, $p = 0.026$, Cramer's V = 0.12. Although the overall chi-square was significant, examination of standardized residuals indicated that no individual cells reached statistical significance. However, Early Adulthood showed the strongest tendency toward overrepresentation in the "Increased" category (residual = 1.50), while Middle Adulthood demonstrated a similar tendency toward "No Change" (residual = 1.55). These patterns, though not statistically significant individually, collectively contribute to the overall significant association.

Collectively, the analyses within the participants who reported NDEs (n = 402) reveal a complex pattern of demographic influences on spiritual or religious transformation. While gender differences were negligible across both continuous and categorical analyses, age emerged as a significant moderator of spirituality or religiosity change. Middle Adulthood participants reported higher baseline spirituality, but Early Adulthood demonstrated the greatest responsiveness to NDEs. Correlational analyses further supported the importance of developmental factors, with chronological age showing consistent positive relationships with both perceived levels of spirituality or religiosity and perceived spirituality or religiosity changes following NDEs. The significant correlation between perceived levels of spirituality or religiosity and perceived spirituality or religiosity changes following NDEs suggests that NDEs build upon, rather than fundamentally alter, pre-existing spiritual dispositions. These findings highlight the importance of considering developmental context when examining spiritual transformation following profound existential experiences.

4. Discussion

Among participants who reported having experienced an NDE, the majority indicated a perceived increase in spirituality or religiosity following the event. This pattern

suggests that, within an urban Indonesian context, NDEs are commonly accompanied by self-reported shifts in spiritual–religious orientation as understood and evaluated by experiencers themselves. Given the cross-sectional design and reliance on retrospective self-report, these findings should be interpreted as reflecting subjective perceptions of change rather than objective transformation or causal effects.

Despite these limitations, the observed pattern is consistent with prior empirical research documenting heightened spirituality, increased existential reflection, and a strengthened sense of connection to self, others, and the broader world following NDEs (Greyson 2006; Khanna and Greyson 2014a, 2014b). Previous studies have shown that post-NDE spirituality is often expressed through more frequent daily spiritual experiences and elevated spiritual well-being, with evidence suggesting that the perceived depth or intensity of the NDE is positively associated with the magnitude of subsequent spiritual change.

Within this framework, the present findings can be interpreted as aligning with an established empirical pattern of perceived spiritual–religious transformation following NDEs, while remaining exploratory in scope. The results extend existing literature by demonstrating that similar patterns of post-NDE spiritual change are reported within a non-Western, religiously plural, urban population, thereby contributing to the cross-cultural generalizability of NDE-related aftereffects.

In line with a recent cross-sectional study by del Castillo et al. (2025), the present findings indicate that 54.5% of NDErs reported an increase in spirituality or religiosity within six months of their experience, as measured by a single closed-ended item. While cross-sectional designs are well suited to capturing early or immediate post-experiential shifts, such reports are likely to reflect only an initial phase of a longer and potentially evolving process of spiritual change. Evidence from longitudinal research suggests that changes in spirituality following NDEs often unfold gradually and may intensify over time. For instance, Van Lommel et al. (2001), in follow-up interviews conducted two and eight years after an NDE, documented continued increases in religious attitudes, including a stronger sense of life purpose, enhanced inner meaning, and sustained interest in spiritual matters. Together, these findings indicate that post-NDE spiritual changes are not only persistent but may become more pronounced across extended timeframes. In light of this trajectory, it is plausible that a greater proportion of participants in the present sample would report increased spirituality or religiosity if assessments were conducted at later follow-up points.

The transformative impact of near-death experiences on spirituality may also be understood within Islamic, pluralistic, and broader Southeast Asian spiritual frameworks that emphasize relationality, moral orientation, and experiential dimensions of religiosity. In many Southeast Asian contexts, including Indonesia, spirituality is commonly embedded in everyday practices, ethical conduct, and a sense of interconnectedness between the self, others, and the transcendent, rather than being confined to formal doctrinal adherence. From this perspective, the transcendental and boundary-altering features frequently reported in NDEs may function as catalysts for reorienting personal meaning systems, encouraging a shift from self-centered concerns toward heightened social responsibility, compassion, and perceived closeness to a higher reality. Such shifts resonate with descriptions of post-NDE changes involving increased empathy, unconditional concern for others, and reduced fear of death (Greyson 2006, 2007), which parallel widely shared moral–spiritual ideals across religious traditions in the region.

Empirical studies have consistently shown that NDEs are associated with increased spirituality and religiosity. For instance, individuals who have had NDEs report greater spiritual growth and a stronger belief in life after death compared to those who have not had such experiences (Greyson and Khanna 2014; Lindsay and Tassell-Matamua 2021). Ad-

ditionally, the phenomenological characteristics of NDEs, such as out-of-body experiences and encounters with non-physical beings, contribute to these spiritual transformations (Greyson 2012; Shushan 2021). In summary, NDEs often lead to increased perceived spirituality and religiosity, profoundly impacting individuals' beliefs, attitudes, and behaviors. This transformation can be understood through various theoretical frameworks and is supported by empirical evidence. The positive changes in spirituality and religiosity following NDEs highlight the importance of considering these experiences in clinical practice and further research.

This study also revealed that a higher proportion of male participants within their respective gender group reported having experienced an NDE compared to female participants. This pattern reflects differences in within-group reporting rates rather than differences in overall prevalence. Accordingly, the observed gender variation should be interpreted as indicating differential likelihoods of reporting or labeling an experience as an NDE, rather than differences in the occurrence of such experiences.

Given the limited attention to gender effects in prior NDE research, these findings should be interpreted cautiously. Gender may function as a contextual factor influencing how extreme or life-threatening experiences are appraised, recalled, or communicated, rather than as a determinant of the experiences themselves. Previous studies suggest that men may be more likely to report episodes involving loss of consciousness or perceived proximity to death, which could increase the probability of identifying an event as an NDE (Cant et al. 2012; Chandradasa et al. 2018). Importantly, this does not imply higher exposure or susceptibility among men, but rather possible differences in interpretive framing.

Additionally, sociocultural norms surrounding emotional expression and disclosure may shape gendered reporting patterns. Variations in how men and women describe or contextualize intense experiences could contribute to observed differences in self-report, independent of the phenomenology of the events themselves (Athappilly et al. 2006; Belanti et al. 2008). Consequently, the present findings should be viewed as indicative of reporting dynamics rather than substantive gender differences in near-death experiences.

Participants aged 55 years and older reported the highest levels of spirituality or religiosity. This pattern should be interpreted cautiously, given the small number of participants in this age group, which limits statistical power and generalizability. Rather than indicating a robust age effect specific to NDEs, this finding is more plausibly understood in relation to broader developmental and cohort-related processes. Prior research consistently shows that later adulthood is associated with greater engagement in spiritual or religious concerns, often linked to meaning-making, coping with loss, declining health, and heightened awareness of mortality (Imamura et al. 2015; Marciniak et al. 2019; Soriano and Calong 2022; de Freitas et al. 2020). In this sense, elevated spirituality among older participants may reflect baseline life-course differences rather than changes directly attributable to NDEs.

Cohort and sociocultural factors may further shape age-related patterns. Older adults in Indonesia were more likely to be socialized within educational and cultural contexts emphasizing institutional religiosity (Matlovič et al. 2015), whereas younger cohorts—particularly in large urban environments—are more frequently exposed to secularized and pluralistic value systems (Mamadouh and van der Welle 2015; Zellma 2024). These generational differences may contribute to variations in how spirituality or religiosity is expressed, ranging from institutional affiliation to more individualized or subjective forms of spirituality (Donaldson et al. 2019; Turner 2008; Zając and Wilkosz 2025).

Importantly, higher levels of spirituality or religiosity in older adulthood do not necessarily imply greater post-NDE change. It is plausible that NDEs function as reinforcing experiences for individuals with already established spiritual frameworks, while exerting more transformative effects earlier in the life course. However, the cross-sectional and

self-report nature of the present study precludes direct examination of change trajectories. Longitudinal research with age-diverse samples is therefore needed to disentangle developmental, cohort, and experiential influences on post-NDE spiritual transformation.

Among participants aged 55 years and older who reported a near-death experience, the proportion indicating increased spirituality or religiosity was equal to the proportion reporting no change. Given the small size of this subgroup, this pattern should be interpreted descriptively rather than inferentially. Rather than indicating limited impact, this balance may reflect higher baseline levels of spirituality or religiosity in later adulthood, which could reduce the likelihood of perceiving further change. Prior research suggests that beliefs related to death and the afterlife are positively associated with life satisfaction in older adults (Imamura et al. 2015), indicating that established belief systems may be reinforced rather than transformed following extreme experiences.

Because nearly 90% of the sample was younger than 35 years, age-related interpretations are more robust within younger cohorts. Participants aged 16 to 44 reported the highest proportions of increased spirituality or religiosity following an NDE (53.3% in ages 16–24; 70.7% in 25–34; and 60.0% in 35–44). This pattern aligns with developmental models emphasizing heightened identity exploration, relational motivation, and meaning-making during adolescence and early to mid-adulthood. Within Erikson's psychosocial framework, this life stage is characterized by the task of intimacy versus isolation, during which individuals may be particularly receptive to experiences that reorganize personal values and life narratives. Accordingly, NDEs may exert stronger subjective effects during periods of greater cognitive and identity plasticity (Greyson 2006; Miquel-Sendra and García-Alandete 2025).

Inferential analyses further suggest that age moderates responsiveness to NDEs, with early adulthood emerging as a period of greater perceived change and middle adulthood reflecting relative stability. Importantly, this pattern can be interpreted within a psychological framework without invoking metaphysical explanations. From a neurocognitive perspective, NDEs may be understood as extreme states of consciousness arising under physiological stress, followed by post-event cognitive reappraisal and narrative reconstruction.

Finally, participants identifying as non-religious prior to the NDE were overrepresented among those reporting decreased spirituality or religiosity, suggesting that pre-existing belief frameworks shape post-experiential integration. The absence of gender differences across analyses further indicates that perceived post-NDE change operates independently of gender-based psychological mechanisms. Overall, these findings support a meaning-making account of post-NDE spiritual change, emphasizing subjective integration, developmental timing, and cognitive appraisal processes rather than theological claims.

4.1. Limitation of the Study

Several limitations should be considered when interpreting the present findings. First, as a survey-based study, each primary construct was assessed using a single-item measure. While this approach facilitated efficient data collection and reduced respondent burden, it necessarily limited measurement precision and restricted the ability to evaluate reliability and construct validity. Consequently, the findings reflect broad subjective appraisals rather than nuanced psychometric assessments of spirituality or religiosity.

Second, the cross-sectional design precludes causal inference and limits conclusions regarding temporal change. Participants were asked to reflect on perceived changes within the first six months following their NDE, which likely captures early impressions rather than the more gradual or sustained transformations documented in longitudinal research. As such, the reported changes should be understood as proximal, self-attributed shifts rather than enduring outcomes.

Third, the demographic composition of the sample constrains generalizability. The participants were predominantly young, female, and Muslim, reflecting the sociocultural characteristics of urban Indonesian populations accessible through online recruitment. Moreover, the age distribution was heavily skewed toward younger adults, with very limited representation of participants aged 55 years and older. This imbalance restricts developmental interpretations and warrants particular caution when considering age-related patterns, especially in later adulthood.

Despite these limitations, the methodological choices align with the exploratory aims of the study. The single-item, self-report format was intentionally employed to obtain a phenomenological overview of perceived spiritual or religious change following NDEs, rather than to provide a comprehensive psychometric evaluation. Similarly, the six-month reference period was selected to capture early integration processes, acknowledging that longer-term trajectories remain unexamined. Taken together, these constraints define the contextual boundaries of the findings while underscoring the need for future research employing longitudinal designs, multidimensional measures, and more age-diverse samples. Within these bounds, the present study offers an initial empirical contribution to understanding post-NDE spirituality in a non-Western urban context and provides a foundation for more detailed investigation.

4.2. Future Investigation

Future research should seek to address the methodological limitations of the present study by adopting more comprehensive and psychometrically rigorous designs. In particular, subsequent cross-sectional investigations would benefit from the use of multi-item, validated self-report instruments to assess key constructs in greater depth (e.g., the NDE Scale (Greyson 1983; Martial et al. 2020) for experience depth, the Spiritual Well-Being Scale (Ekşi and Kardaş 2017; Paloutzian and Ellison 1982, 1991) for spirituality, and the Centrality of Religiosity Scale (Huber et al. 2012) for religiosity) to improve reliability and construct validity and to allow more fine-grained analysis of experiential and outcome dimensions.

Longitudinal designs are especially warranted to examine trajectories of spiritual and religious change over time following an NDE. Such approaches would enable researchers to distinguish between early, transient shifts and more enduring transformations, as well as to identify potential phases of consolidation, deepening, or attenuation of spiritual meaning. In addition, future studies should prioritize the recruitment of more diverse and representative samples. Expanding age ranges—particularly by increasing the inclusion of older adults—and incorporating participants from varied religious traditions, socioeconomic backgrounds, and cultural contexts would enhance the generalizability of findings and allow for more robust examination of developmental, cohort, and contextual moderators.

Together, these methodological advances would facilitate a more nuanced understanding of the complex interplay between near-death experiences, individual characteristics, and processes of spiritual or religious transformation, thereby strengthening the empirical foundation of NDE research across sociocultural settings.

5. Conclusions

This study indicates that demographic factors are differentially associated with perceived spiritual or religious outcomes following near-death experiences, with age emerging as a meaningful moderator and gender showing no consistent effects on post-NDE change. The findings suggest a developmental pattern in which early adulthood is characterized by greater openness to perceived spiritual or religious change, whereas middle adulthood is associated with higher baseline levels and relative stability. Importantly, pre-existing spiritual or religious orientation appears to play a central role in shaping

post-NDE outcomes. Individuals identifying as non-religious prior to the experience were more likely to report decreases in spirituality or religiosity, underscoring that NDEs are interpreted and integrated through existing belief frameworks rather than producing uniform transformative effects.

Within an urban Indonesian context, the present results provide initial empirical support for the association between NDEs and perceived increases in spirituality or religiosity, extending prior findings beyond predominantly Western samples. At the same time, the data reveal nuanced age-related patterns. Although older adults reported higher baseline spirituality or religiosity, younger cohorts—particularly those in early adulthood—showed the most pronounced perceived increases following an NDE. This pattern is consistent with developmental perspectives emphasizing identity exploration and meaning-making during earlier life stages.

While a higher proportion of male participants reported having experienced an NDE, the absence of gender differences in post-experiential change suggests that gender may function primarily as a contextual or reporting-related factor rather than a determinant of spiritual transformation. Taken together, these findings highlight that perceived spiritual or religious change following NDEs is heterogeneous and shaped by developmental timing and prior worldview. The study underscores the importance of situating NDE-related transformation within psychological, developmental, and cultural contexts, while pointing to the need for longitudinal and more demographically diverse research to clarify change trajectories over time.

Author Contributions: Conceptualization, R.L. and S.H.; methodology, R.L. and M.A.M.; software, R.L. and M.A.M.; validation, R.L.; formal analysis, R.L. and M.A.M.; investigation, R.L. and M.A.M.; resources, R.L. and S.H.; data curation, R.L.; writing—original draft preparation, R.L. and M.A.M.; writing—review and editing, R.L. and S.H.; visualization, M.A.M.; supervision, R.L. and S.H.; project administration, R.L. and S.H.; funding acquisition, R.L. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board of UIN Syarif Hidayatullah Jakarta (protocol code 97a/LP2M/HM-01, date of approval 5 May 2022).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study. Participant consent was secured electronically through an informed consent mechanism displayed on the initial page of the questionnaire. Data analysis was restricted solely to participants who formally indicated their voluntary agreement by accepting the stated terms.

Data Availability Statement: To promote transparency and reproducibility, the research data supporting the findings of this article will be made available by the corresponding author Rena Latifa upon reasonable request.

Acknowledgments: During the preparation of this manuscript, this study utilized artificial intelligence through the ChatGPT 5.3 platform as a tool for language editing of the manuscript's content. This process was conducted under the authors' strict supervision, and the authors retain full responsibility for the accuracy and integrity of the scholarly discussion presented in this work. The authors have reviewed and edited the output and take full responsibility for the content of this publication.

Conflicts of Interest: The authors declare no conflicts of interest.

Abbreviations

The following abbreviations are used in this manuscript:

NDEs	Near-death experiences
NDErs	Near-death experiencers

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