Religiosity and Stress Level on Pregnant Women

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Highlights
- Hormonal changes during pregnancy can increase the likelihood of mood swings in mothers, leading to stress.
- Previous research indicates that high levels of stress during pregnancy can affect the fetus through the transfer of stress hormones from the mother via the placenta. It is essential to support pregnant women in avoiding stress, as it can result in fatigue, depression, and vulnerability to illnesses (Kemenkes, 2019).
- Stress levels in pregnant women can be influenced by various external and internal factors. Internal factors encompass hormonal changes, physical discomfort such as back pain and frequent urination as pregnancy progresses, approaching labor process (Kasenda, Wungouw & Lolong, 2017), level of religiosity, and others (Wahyuni, 2014).

Abstract
Pregnancy can be a stressful time for women as they prepare for the physical and emotional changes that come with childbirth. Religiosity has been found to have a significant impact on stress levels in various populations. This study aims to understand the relationship between religiosity and stress level of pregnant women. It is a quantitative research. The study included 53 Muslim pregnant women participants. Data was taken using the Religiosity Scale and Stress Level Scale. The data was analyzed by product moment analysis correlation. The result of the analysis showed a negative and strong correlation between religiosity and stress levels, with a coefficient correlation (rxy) = -0.894 (p<0.01) and a coefficient determination of 0.796. Based on this data, it was concluded that religiosity contributed effectively to the stress levels of Muslim pregnant women by 79.6%. The hypothesis was proven, that there was a relationship between religiosity and stress level among Muslim pregnant women. The study underscores the importance of understanding the complex interplay between religion and mental health. The findings suggest that religiosity can be an effective factor in reducing stress levels in Muslim pregnant women.

Keywords: Muslim Pregnant Women; Religiosity; Stress Level
INTRODUCTION

Hormonal changes during pregnancy can increase the likelihood of mood swings in mothers, leading to stress. Managing stress is crucial for pregnant women as it can impact the well-being and development of the fetus. Previous research indicates that high levels of stress during pregnancy can affect the fetus through the transfer of stress hormones from the mother via the placenta. It is essential to support pregnant women in avoiding stress, as it can result in fatigue, depression, and vulnerability to illnesses (Kemenkes, 2019). Psychological, social, and emotional changes before and during pregnancy can be stressors for women, particularly in their first pregnancy (Primawati et al., 2018). In a study by Yazia and Suryani (2022) investigating childbirth-related stress among pregnant women in Wilayah Kerja Puskesmas Lubuk Buaya Padang in 2016, it was found that some pregnant women still experienced stress. Questionnaire responses indicated that these women exhibited signs of anger over trivial matters, felt excessive energy expenditure due to anxiety, and experienced irritability. Stress levels during pregnancy varied across trimesters, with higher gestational age correlating with increased stress. In the third trimester, there was a strong fear of giving birth, which positively correlated with stress (Yazia & Suryani, 2022). Previous studies have consistently shown the detrimental effects of stress during pregnancy on the health of both mother and fetus, including the risk of miscarriage or premature birth (Selfianan et al., 2023).

Addressing stress in pregnant women is crucial, given its significant consequences for both maternal and fetal well-being (Rahmatika, 2014). Research by Iskandar and Sofia (2019) suggests that pregnant women facing stress from internal family issues, life and environmental changes, or financial concerns are at a higher risk of childbirth complications. Additionally, stress during pregnancy can affect pregnant women's endocrine and immune systems, increasing the likelihood of low birth weight (LBW) babies and premature birth (Coussons-Read, 2021). Stress levels in pregnant women can be influenced by various external and internal factors. External factors include work demands, busy schedules (Kasenda, Wungouw & Lolong, 2017), history of pregnancy risks, and family support (Wahyuni, 2014). Internal factors encompass hormonal changes, physical discomfort such as back pain and frequent urination as pregnancy progresses, approaching labor process (Kasenda, Wungouw & Lolong, 2017), level of religiosity, and others (Wahyuni, 2014).

Stress, as defined by Santrock (2007), refers to an individual's response to situations and events that threaten them and require coping mechanisms. Vincent Cornelli (Donsu, 2017) describes stress as disturbances in the body and mind caused by life changes and demands. Sarafino & Smith (2012) outline various aspects of stress, including biological symptoms (e.g., headaches, eating and digestive disorders, excessive sweating) and psychological indicators related to condition, emotion, and behavior.

Religiosity, according to Glock & Stark (Ancok & Suroso, 2004), refers to an individual’s level of commitment and conception of their religion, encompassing dimensions centered on God. The five dimensions of religiosity identified by Glock & Strack (Ancok & Suroso, 2004) include individual belief in their religion, religious worship and rituals, religious practices, knowledge of religious teachings, and appreciation of the religion one adheres to.

Meanwhile, according to Shihab (2006), religiosity itself has several meanings. First, in the sociology dictionary, religiosity is religious in nature; religious. Second, religiosity is religious appreciation and the depth of belief that is expressed by performing daily worship, praying, and reading holy books. Third, the form of harmonious interaction between parties
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with a higher position (ie Allah SWT), than others (ie creatures), uses three basic concepts (ie faith, Islam and ihsan).

Based on this explanation, it can be concluded that religiosity is a commitment to religious appreciation and the depth of belief as a form of harmonious interaction between God and creatures, which is expressed by carrying out daily worship such as praying, praying, and reading holy books. The purpose of this study was to determine the relationship between religiosity and stress levels in pregnant women. The research hypothesis is that there is a negative relationship between religiosity and stress levels in pregnant women. The higher the religiosity level of pregnant women, the lower the stress level. Conversely, the lower the religiosity level of pregnant women, the higher the stress level.

METHOD

Study design

The study design for this research is a quantitative study. It involves the collection and analysis of numerical data to examine the relationship between religiosity and stress levels among Muslim pregnant women in Yogyakarta. The data for this research was collected using an online survey through Google Form. The study participants were invited to complete the survey through personal messaging, and access to the survey was limited to one response per account to prevent bias. The data was collected between June 7th and June 17th, 2022.

Participant

The subjects in this study were pregnant women. The subjects were selected using purposive sampling technique. Purposive sampling is a sampling technique that is done by selecting subjects based on specific characteristics or criteria (Hadi, 2016). The criteria for the subjects in this study were Muslim pregnant women. The total number of subjects in this study was 53 people.

Instruments

In this study, data was collected using two scales, namely the Religiosity Scale with 38 items and the Stress level scale with 29 items. The likert model attitude scale was used in both scales, which consist of statements that aim to reveal the subjects’ attitudes toward the object being measured (Azwar, 2016). The item in the scales have two styles, namely favorable and unfavorable. Favorable items are those that support the attitude object, while unfavorable items are those that do not support the attitude object (Azwar, 2016). The subject's response options consist of 4 categories, namely SS (Sangat Sesuai), S (Sesuai), TS (Tidak Sesuai), and STS (Sangat Tidak Sesuai). The value criteria for the answers are SS = 4, S = 3, TS = 2, STS = 1 for favorable items and SS = 1, S = 2, TS = 3, STS = 4 for unfavorable items.

To meet the validity and reliability standards, both scales were tested. Based on the results of the test conducted on May 25-30, 2022, on 33 pregnant women, the validity values for the stress level scale ranged from 0.009 to 0.502, and reliability coefficient obtained was rxx = 0.950 using cronbach alpha standard. While for religiosity scale the validity values range from 0.210 to 0.642 and the alpha reliability coefficient obtained was rxx = 0.906. In determining the value of validity and reliability, the researcher refers to the theory from Azwar (2016). The item discriminating index is considered satisfactory if it has a correlation coefficient riX ≥ 0.30. However, if the number of items on the scale has not reached the required limit, the correlation coefficient can be lowered to 0.25. Meanwhile, the reliability coefficient is in the range of 0.00-
The reliability coefficient (rxx) which is closer to 1.00 indicates that the measurement is more reliable and conversely the lower the reliability coefficient (rxx) which is close to 0.00 means the measurement is increasingly unreliable (Azwar, 2016).

**Procedure**

The research procedure in this study involves several stages, which are as follows:

**Pre-research stage**

In this stage, the researcher conducted several procedures. The researcher conducted a pre-research survey on 46 pregnant Muslim women from January 18th to 25th, 2022. Based on the pre-research survey, it was found that 47% of the respondents experience high stress level. In this stage the researcher did pilot-tested scale from May 25th to 30th, 2022 on 33 pregnant Muslim women to meet the validity and reliability of the Religiosity and Stress Level scales.

**Research implementation**

The method used in distributing the research scale is by distributing it online, using Google Form. To anticipate bias in data distribution, the researcher controlled the data by only allowing one account access to fill out the research scale once. In addition, the researcher conducted distribution through personal instant messages (personal chat) to prospective subjects who met the criteria. The research was conducted from June 7th to 17th, 2022 on 53 pregnant women. After the subjects were considered sufficient and in line with the predetermined target, the researcher then analyzed the available data. In an effort to guarantee the consent of respondents, the researcher first asked their consent to become respondents by including a inform consent page before filling out the scale on the next page on the Google form. This consent is even a requirement before the respondent fills out the scale.

**Post-research stage**

In this stage, the data obtained from the research was processed quantitatively using statistical computation procedures according to the existing data analysis method. These results were then the basis for drawing conclusions from the research.

**Data Analysis**

The data analysis method used in this study is the product moment correlation analysis. The product moment correlation analysis is used to test the relationship between religiosity and stress levels in Muslim pregnant women. This analysis technique was chosen because the study aimed to examine the relationship between predictor variables and criterion variables. The data analysis was performed using the SPSS software (Statistical Product Service Solutions).
RESULT

Participant’s characteristics

In general, total participants was 53 women who are pregnant, aged 20-40 years.

Table 1.
Participant characteristic

<table>
<thead>
<tr>
<th>Category</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of participants</td>
<td></td>
</tr>
<tr>
<td>20 – 25 years old</td>
<td>21</td>
</tr>
<tr>
<td>26 – 30 years old</td>
<td>17</td>
</tr>
<tr>
<td>31 – 35 years old</td>
<td>11</td>
</tr>
<tr>
<td>36 – 40 years old</td>
<td>4</td>
</tr>
<tr>
<td>Pregnancy order</td>
<td></td>
</tr>
<tr>
<td>First pregnancy</td>
<td>31</td>
</tr>
<tr>
<td>Second pregnancy</td>
<td>13</td>
</tr>
<tr>
<td>Third pregnancy</td>
<td>6</td>
</tr>
<tr>
<td>Fourth pregnancy</td>
<td>3</td>
</tr>
<tr>
<td>Pregnancy age / gestational age</td>
<td></td>
</tr>
<tr>
<td>First trimester of gestation</td>
<td>18</td>
</tr>
<tr>
<td>Second trimester of gestation</td>
<td>13</td>
</tr>
<tr>
<td>Third trimester of gestation</td>
<td>22</td>
</tr>
</tbody>
</table>

The research data was obtained from the Stress Level and Religiosity Scale. The research data was used as the basis for testing hypotheses using hypothetical and empirical scores. The hypothetical and empirical score data described include minimum and maximum values, range, standard deviation, and mean. These statistics were used to describe the characteristics of the study participants.

Table 2.
Hypothetic and Empiric Score

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Hypothetical score</th>
<th></th>
<th>Empirical score</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>Score</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>Stress Level</td>
<td>53</td>
<td>72.5</td>
<td>29</td>
<td>116</td>
<td>14.5</td>
</tr>
<tr>
<td>Religiosity</td>
<td>53</td>
<td>95</td>
<td>38</td>
<td>152</td>
<td>19</td>
</tr>
</tbody>
</table>

Description:
N = Number of participants
Min = Minimum score
Max = Maximum score
M = Mean
SD = Deviation Standard

Based on the descriptive data, the researcher then categorized the two research variables. The data categories in the study aim to place individuals into separated groups according to a measured continuum in a hierarchical manner (Azwar, 2016).

Table 3
Level Stress Scale Categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Formula</th>
<th>Score</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>X &gt; (μ + 1σ)</td>
<td>X &gt; 87</td>
<td>3</td>
<td>5.6%</td>
</tr>
<tr>
<td>Middle</td>
<td>μ - 1σ &lt; X &lt; μ + 1σ</td>
<td>58 ≤ X ≤ 87</td>
<td>45</td>
<td>85%</td>
</tr>
<tr>
<td>Low</td>
<td>X &lt; (μ - 1σ)</td>
<td>X &lt; 58</td>
<td>5</td>
<td>9.4%</td>
</tr>
</tbody>
</table>

Total    | 53      | 100%    |

Description:
X = X – Subject score
μ = Mean
σ = Standard deviation
Thus, the stress level was categorized into three levels: high, moderate, and low. Based on the hypothetical mean and standard deviation, the results of the categorization were obtained as follows: the high category was 5.6% (3 subjects), the moderate category was 85% (45 subjects), and the low category was 9.4% (5 subjects).

### Table 4. Religiosity Scale Categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Formula</th>
<th>Score</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>$X &gt; (\mu + 1\sigma)$</td>
<td>$X &gt; 114$</td>
<td>47</td>
<td>88.67%</td>
</tr>
<tr>
<td>Middle</td>
<td>$\mu - 1\sigma &lt; X &lt; \mu + 1\sigma$</td>
<td>$76 \leq X \leq 114$</td>
<td>6</td>
<td>11.33%</td>
</tr>
<tr>
<td>Low</td>
<td>$X &lt; (\mu - 1\sigma)$</td>
<td>$X &lt; 76$</td>
<td>-</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>53</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Description:**

$X = \text{Subject score}$  
$\mu = \text{Mean}$  
$\sigma = \text{Hypotetic deviation standard}$

Therefore, religiosity was categorized into 3 levels, namely high, moderate, and low. The categorization results based on hypothetical mean and standard deviation showed that the high category was 88.67% (47 subjects), the moderate category was 11.33% (6 subjects), and the low category was 0% (0 subjects).

### Data analysis

Before conducting hypothesis testing on the research data, there are several requirements that need to be met (Hadi, 2016). This can be done by performing tests for normality and linearity on the available research data.

a. Normality and Linearity Test

The normality test is conducted to determine whether the obtained research data follows a normal distribution. The test used for this prerequisite is the one-sample Kolmogorov-Smirnov (KS-Z) test. The guideline for interpreting the normality test is that if the KS-Z significance value is greater than 0.050, the data follows a normal distribution. Conversely, if the KS-Z significance value is less than or equal to 0.050, the data does not follow a normal distribution.

Based on the analysis conducted on both variables, an F-value of 10.737 ($p < 0.01$) was obtained. This indicates that the relationship between religiosity and stress level is a linear relationship.
b. Hypothesis Testing

Hypothesis testing is performed using the Pearson correlation coefficient, which was developed by Karl Pearson (Sugiyono, 2016). According to Hadi (2016), the Pearson correlation coefficient is used to determine the relationship between two variables, namely the independent variable and the dependent variable. If a significant correlation is obtained, it indicates a relationship between the variables. The guideline for interpreting correlation tests is that if \( p \leq 0.050 \), there is a correlation, and if \( p \geq 0.050 \), there is no correlation. Based on the analysis conducted, the results are presented in Table 6.

Based on the results of the Pearson correlation analysis above, a correlation coefficient \((r_{xy})\) of \(-0.894\) \((p < 0.001)\) was obtained, indicating a negative relationship between religiosity and stress level in pregnant women. This indicates that the hypothesis in this study is accepted. Referring to Sugiyono (2016), this correlation coefficient falls within the category of a very strong correlation, as it is within the interval of \(0.80-1.00\). Furthermore, the analysis also reveals a coefficient of determination of 0.796, indicating that religiosity contributes effectively to 79.6% of the stress level, while the remaining 20.4% is influenced by other factors. These other factors may include hormones, stress coping strategies, family and environmental support, health, economic conditions, and others.

DISCUSSION

Begin the discussion by writing the study aims to remind the reader about the focus of the manuscript. Then followed by reporting the main study findings and previous study relevant to study findings. Discuss the study findings, both major and minor findings, and explain the reason why these findings are important. In the last paragraph, please describe the study limitation and the implication of the study findings for further report or study.

This study aims to understand the relationship between religiosity and stress level of pregnant women. Based on the analysis of the research data, it is found that there is a negative correlation between religiosity and the level of stress in pregnant women. This is indicated by the correlation coefficient \((r_{xy})\) of \(-0.894\) \((p < 0.01)\). This correlation proves that religiosity is one of the variables that plays a significant role in reducing the level of stress in pregnant women. This is in line with the hypothesis formulated by the researchers from the beginning, stating that the higher the level of religiosity in pregnant women, the lower their level of stress. Conversely, the lower the level of religiosity in pregnant women, the higher their level of stress.

The data in this study can be categorized into three groups: high, moderate, and low. In terms of the stress level variable, it was found that 3 subjects had high stress levels (5.6%), 45 subjects had moderate stress levels (85%), while 5 subjects had low stress levels (9.4%). As for the religiosity variable, 47 subjects had high religiosity (88.67%), 6 subjects had moderate religiosity (11.33%), and there were no subjects with low religiosity.

In this study, the majority of the subjects had a high level of religiosity (88.67%), while the majority of the subjects had a moderate level of stress (85%), with the majority of pregnant women with moderate stress levels being primigravida or first-time mothers (60%). This is in line with the study by Sehmawati and Permatasari (2020), where primigravida women who have not experienced childbirth yet are more susceptible to stress compared to multigravida women or those who have given birth before. The higher level of stress in primigravida women can be attributed to their younger age and the influence of negative information and stories from others'
experiences (Hastanti, Budiono, Febriyana, 2019). On the other hand, stress in multigravida women can be caused by negative experiences from previous childbirth, lack of support, and economic problems due to the need to support more than one child (Jeyanthi & Kavitha, 2008).

In addition to the above explanation, other factors that can affect the level of stress in pregnant women include the fact that pregnant women are more vulnerable to viral infections (Fakari & Simbar, 2020), making them susceptible to COVID-19 infection due to their lowered immunity caused by hormonal changes during pregnancy (Yolanda, Bakhtiar, Putri, & Firgantri, 2021). This can lead to psychological effects on pregnant women, including stress, anxiety, and depression (Yuanti et al., 2021).

Stress in pregnant women needs to be addressed because persistent stress can potentially lead to premature birth, low birth weight, hyperactivity, and irritability in infants (Pieter & Lumongga, 2021). Moreover, the release of cortisol hormone during stress has an inhibitory effect on blood flow to the fetus, which can cause fetal developmental disorders (Henessy & Karumanachi, 2021). Stress in pregnant women can also lead to preterm birth and low birth weight infants (Kramer et al., 2013). According to Nurmalasari's study (2018), one of the ways pregnant women cope with stress through religious approaches is through prayer, remembrance (zikr), reading the Qur'an and religious books, and supplication. This is because pregnant women consider religion as a significant support in improving their physiological and psychological conditions and reducing psychological distress. Several studies have shown that the level of religiosity in Indonesian society is higher compared to other countries (Stavrova, Fetchenhauer, & Schlösser, 2013).

According to Glock and Stark (Ancok & Suroso, 2004), religiosity refers to an individual's level of conception and commitment to their religion, which includes dimensions centered around God. The dimensions of religiosity, as described by Glock and Stark, are as follows: an individual's beliefs in their religion, sacred worship or rituals that must be performed according to religious guidance, the practice or expression of one's religious beliefs, a person's knowledge of the teachings of their religion, and an individual's spiritual experiences or spiritual encounters related to their religion.

Religiosity is an important variable that can affect the level of stress in pregnant women. This research supports the theory of Watterson and Giesler (Radzi et al., 2014) that religious individuals have a higher level of self-control, which enables them to cope better with difficult tasks and life situations, thereby helping to prevent stress, anxiety, and depression. Additionally, high levels of religiosity have the potential to reduce stress through the emotional aspect of feeling the presence of God, as individuals feel they are not alone in facing life's challenges (Alflakseir & Coleman, 2011). Furthermore, the belief that life burdens have been adjusted by God according to individual capabilities leads individuals to adopt a more positive outlook when dealing with life's burdens, seeing them as tests of patience and opportunities for spiritual growth (Alflakseir & Coleman, 2011). Based on research conducted on pregnant women by Clements and Ermakova (2012), surrendering oneself to God has been shown to reduce stress levels, as measured by three different instruments.

Moreover, religiosity as a form of worship can help reduce stress through daily religious practices such as prayer (Putri, 2021), dhikr (Hakim & Ananingsyas, 2020), and reading the Quran (Mehta, 1997). This is evidenced by the practice of Tahajjud prayer, which is considered the highest form of meditation when performed with tranquility and achieving deep concentration (Yusuf, 2008), resulting in relaxation effects and psychological stress reduction (Putri, 2021). Additionally, prostration during prayer can improve blood flow to the brain (El-
Sutha, 2016), triggering the secretion of hormones such as serotonin, endorphins, dopamine, and oxytocin, thus leading to physiological stress reduction (Haruyama, 2015). Based on the experiment by Anggraeni and Subandi (2014), it was found that dhikr can be a therapy to lower high blood pressure and slow down heart rate, thereby inducing a relaxation effect. According to Al-Qadhi (Thayyarah, 2014), listening to recitation of the Quran has a significant effect in reducing reflex nerve tension and decreasing heart rate frequency, thus promoting relaxation.

This can be explained by Glock and Stark’s (Ancok and Suroso, 2004) notion that the dimensions of religiosity are interconnected. The dimension of knowledge, which includes knowledge of the contents of the Quran and the core teachings of religion, serves as an important foundation to strengthen the dimensions of worship and practice since individuals need to know the laws, methods of worship, and ways of behaving in their religion. Meanwhile, the dimension of spiritual experience encompasses the dimensions of belief, practice, and worship because it reflects the level at which Muslims experience religious feelings such as tranquility during prayer, dhikr, reading the Quran, and supplication, as well as feelings of closeness to Allah, being aided or admonished by Allah, having prayers answered by Allah, trust (tawakkul), and gratitude. These feelings provide a sense of calmness.

However, it is important to acknowledge the limitations of the study mentioned in the article. The study may have exhibited a narrow focus by concentrating on a specific group of pregnant women or a particular religious context. Consequently, the findings may not be readily applicable to all pregnant women or individuals from diverse religious backgrounds. To establish a more comprehensive understanding of the association between religiosity and stress during pregnancy, it is recommended that researchers replicate the study using a larger and more diverse sample. This approach will enhance the generalizability of the findings across various populations and religious contexts. By addressing the limitation and pursuing further research, researchers can expand our knowledge of the relationship between religiosity and stress in pregnancy, leading to more targeted interventions and support for pregnant women’s mental health and well-being. In addition, from the results of the study it was found that the stress level of pregnant women was still in the moderate category even though the level of religiosity was high. So, the suggestion for future researchers is to be able to further examine the items from the scale so that the results obtained are more correlative.

**CONCLUSION**

The study concludes that there is a significant negative relationship between religiosity and stress levels in pregnant women. Pregnant women who embrace religious beliefs and practices are better able to cope with pregnancy-related stress, while those with lower levels of religiosity may struggle to manage stress. The effective contribution of religiosity to stress levels in pregnant women is 79.6%, with 20.4% influenced by other unexplored factors.

**ACKNOWLEDGEMENT**

We would like to extend our heartfelt appreciation to the participants who generously shared their time and experiences, without whom this study would not have been possible. Additionally, we would like to thank all the individuals who provided assistance, guidance, and support throughout the research process. Their invaluable contributions greatly enriched the quality of this study.
CONFLICT OF INTEREST

The authors declare no conflict of interest. If any, the authors should declare.

REFERENCE

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