



## UNDERSTANDING THE CONCEPT OF PRESSURE IN PHYSICS BASED ON QUR'ANIC

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**Abstract :** *This research discusses the integration of science, especially physics, with religious values in the Qur'an. With a focus on the concept of pressure in physics, this study shows that many kauniyah verses in the Qur'an are in harmony with scientific principles. The method used is a literature study that links physics theory with religious teaching, emphasizing the importance of understanding natural phenomena as a manifestation of the greatness of Allah SWT. The results show that stress as a physics concept can be analogized to human mental state, where spaciousness of heart plays an important role in overcoming stress. This research is expected to pave the way for further studies on the relationship between science and religion in education.*

**Keywords :** *Al-Qur'an, Islamic Values, Physics Concept of Pressure*

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## INTRODUCTION

Allah SWT revealed the Qur'an to the Prophet Muhammad SAW as a guide to life intended for Muslims. The Quran is a source of science, the scientific facts contained in the Quran have been proven to be true, and many scientists have found that the content in the Quran is always one step ahead of science (Sujani & Erna, 2024). The Quran is also proof that it comes from Allah SWT. Its truthfulness is beyond doubt. To do this, we need to learn the meaning of each verse contained in the Qur'an, where there are 750 *kauniyah* verses in the Qur'an including 150 of them including *fiqih* verses (Kanaya & Suliyana, 2023). The *kauniyah* verse is a verse that tells the evidence of the greatness of Allah SWT in the form of the creation of the universe and its contents. In this case, it can be seen that the *kauniyah* verses written in the Qur'an can explain about natural science or science. In Surah Al-Alaq verse 1, Allah says, "Read in the name of your Lord who created" it shows that Allah commands His people to read to gain knowledge in various fields, including the field of physics (hapiz, et al., 2022).

One of the branches of science that studies the phenomena of the universe is physics. Physics learning has many focuses of discussion, one of which is as a shaper of faith in readers towards the natural creations of Allah SWT (Rahma & Ni'matul, 2024). Physics becomes easy and interesting to learn because the concept of physics is related to the application in everyday life, so it can be said to be very close to us (Safitri

&Tsania, 2023). (Zainuddin, et al., 2020) stated that in Islam, science and religious spiritual attitudes are something that cannot be separated. Understanding physics is one of the efforts to instill confidence in the power and majesty of Allah SWT (Rosita & Muhammad, 2024). Therefore, in physics learning, it is important to include religious elements by integrating Islamic values.

The integration of science and the Qur'an results in meaningful learning. Modern science has shown the truth of the Qur'an, there is a positive influence of students who memorize the Qur'an on physics learning outcomes (iskandar, et al., 2020). In general, research that connects science and religion discusses the concept of material to be studied with verses of the Qur'an. There is still little knowledge that reviews science and religion, so researchers are interested in discussing it. Therefore, in this paper, the author tries to examine the concept of physical science in the Qur'an. The concept of physics that is studied By the author is the concept of pressure material that will be associated with verses in the Qur'an.

## METHODS

This research was conducted using the literature study method on pressure material and using the Qur'an as a source of understanding. Literature study is a series of activities related to methods of collecting library data, recording and reading, and how to process research data (Hasyim & Abdul, 2023). The literature used in this study is about the discussion of pressure material according to Islam and its Islamic value to physics learning. The data used comes from various journals on Physics Learning Research on Pressure Material. The data taken is the most relevant data and has a relationship between the physics theory of pressure material and its relation to Islamic values as physics learning.

## RESULTS AND DISCUSSION

### A. Science in Islam

Islamic civilization is the first civilization that integrates science and religion in an integrated manner. In Islam, the combination of religion and science is not a strange thing, because Allah's command to Muhammad SAW as the last messenger, namely the command of iqra or reading / investigating (QS 96: 1-5), even though at that time the holy book of the Qur'an did not yet exist, only the verse was revealed. This means that the command to read / investigate also includes reading Allah's creation in the universe, which is now known as science.

(Fatmi, 2020) There are several verses in the Qur'an instructing humans to utilize their minds, reasoning and so on in order to understand something. (Darmana, 2012) revealed that in the Qur'an (*qauliyah* verses) there are more than 750 *kauniyah* verses while the verses about fiqh are only about 150 verses. This indicates how much affinity there is between the *kauniyyah* verse and the *qauliyah* verse. How much the Qur'an explores the universe which is nothing but the study of science.

Religion that comes from revelation will play a role in providing direction, motivation and ensuring that science can function to provide goodness, benefit, physical and mental welfare of mankind, worship value, the embodiment of an attitude of gratitude and a means to increase faith and piety in order to serve Allah. Likewise, presenting science to religion within certain limits can provide benefits in increasing the faith of a Muslim through a more qualified understanding and way of religion, not too dogmatic.

## B. Philosophy on Pressure and Force Materials (Pressure in Physics)

Pressure in physics is the force applied to each surface area. In English, *pressure* is referred to as pressure, so in this sense, the amount of pressure is symbolized by the letter "P". This symbol comes from the first letter in the English language.

In a quantity that can cause the process of moving objects, either by pushing or pulling. Force can occur when there is interaction between subjects or subjects and objects. If an object has a velocity changed by delta caused by the force exerted by the subject can cause a change in the motion of the object. If a force acts on an area (surface area) it is called pressure (Adi, 2022).

For example, when someone wants to drive a nail into a wall. If we try to drive the nail with our own hands without the help of tools, the nail will not be driven in. This happens because the compressive force of our hands is small. Meanwhile, if we drive a nail using a hammer, the nail will be driven into the wall. This is because the hammer driven by the hand has a greater compressive force. In the context of nailing wood, when the nail is pressed into the wood, the force exerted by the nail is applied to a very small surface, namely the pointed tip of the nail. Therefore, the pressure generated on that surface is very high. This high pressure allows the nail to penetrate the wood easily. If the tip of the nail is not pointed and has a larger surface, the pressure generated will be lower, making it difficult for the nail to penetrate the wood. Therefore, the pointed design of the nail allows the nail to generate a high enough pressure on a small area, so it can easily penetrate the wood. In other words, we can conclude that *pressure* is affected by surface area. The relationship between these quantities is shown in equation 1.

$$P = \frac{F}{A} \quad (1)$$

P = Pressure with units of N/m<sup>2</sup> or Pascal (Pa)

F = Force with units of Newton (N)

A = Surface area with units of m<sup>2</sup>

In physics, pressure has several units including Pascal (Pa), where 1Pa = 1 N/m<sup>2</sup> this is the standard unit of pressure. For the type of derivative unit is Atmosphere (atm), where the relationship between the two is 1 atm = 1.05. 105 Pa (Tebriani & Huriyatul, 2021).

## C. Life Stresses and Sters

In a person, there is a heart that will determine the quality of the resilience of faith he has. The pressure that a person experiences in life will cause a reaction to the heart which is different for each person. The reaction or the way the heart responds to a problem can cause stress. Inner pressure according to (Juanita, 2020), is a feeling that makes people feel if they are burdened as if they are being pursued to achieve a certain thing or behave in a way that causes them to feel anxiety.

One of the real examples in this day and age is the number of teenagers who live in *toxic relationships*, which in the end they feel that *toxic relationships* damage their physical and psychological health because they are victims of toxic relationships. Things that are felt vary by the seadolescents such as feeling lonely, closing them selves off, embarrassed by their friends, not confident, embarrassed and feeling humiliated, even always feeling guilty so that the emergence of suicidal thoughts, one of the adolescents who experienced *toxic relationships* became stressed due to the failure of an expectation that did not match their expectations (Saskia, et al., 2023).

As a human being, every person will face trials in their life journey. In the Al-Quran, Allah emphasizes that every test given is in accordance with the abilities of each individual (Al-Baqarah: 286), but sometimes humans themselves forget the greatness of Allah's help, so that not a few humans who face trials in their life.

As a result, the resilience of an individual may be exaggerated by the trials that he or she has to face, so that he or she can maintain the mental health of his or her psychological side. Therefore, having strong resilience allows a person to accept trials gracefully, without losing hope or trust in the wisdom of Allah SWT (Akbar, et al., 2024).

لَا يُكَلِّفُ اللَّهُ نَفْسًا إِلَّا وُسْعَهَا لَهَا مَا كَسَبَتْ وَعَلَيْهَا مَا اكْتَسَبَتْ رَبَّنَا لَا تُؤَاخِذْنَا إِنْ نَسِينَا أَوْ أَخْطَأْنَا رَبَّنَا وَلَا تَحْمِلْ عَلَيْنَا إَصْرًا كَمَا حَمَلْتَهُ عَلَى الَّذِينَ مِنْ قَبْلِنَا رَبَّنَا وَلَا تُحَمِّلْنَا مَا لَا طَاقَةَ لَنَا بِهِ وَاعْفُ عَنَّا وَارْحَمْنَا أَنْتَ مَوْلَانَا فَانصُرْنَا عَلَى الْقَوْمِ الْكَافِرِينَ ﴿٢٨٦﴾

*Meaning: "Allah does not burden anyone except according to his ability. He gets the reward for the good that he does and the punishment for the evil that he does. (They pray), "O our Lord, do not punish us if we forget or make mistakes. O our Lord, do not burden us with a heavy burden as You have burdened those before us. O our Lord, do not impose on us that which we are not able to bear. Forgive us, pardon us, and have mercy on us. You are our protector, so help us against the disbelievers." (Al-Baqarah Verse 286)*

In the verse above, it is explained that Allah does not burden a person beyond his capacity, which is in accordance with the limits of his ability. Each individual will get the reward of the virtue he intends, even though it is only limited to the intention and has not been realized in reality, and will get the bad consequences of the evil he does that has been manifested in real form.

In facing a problem, each person has a different response. It depends on how he manages his heart. In this case, we can refer to stress as pressure (P) which is an independent variable that is influenced by several things. The problem that occurs is analogized as a pulling force (F) that will affect the quality of the heart (heart elasticity). The response that will occur in humans depends on how large the breadth of the heart is, this we analogize to the surface area of the heart (A).

Islam has the Qur'ān, which is the light, guidance and cure for all diseases, whether of the heart or the body. It is a mercy for the universe. By meditating on the Quran, i.e. understanding, delving into, and living the content of the Quran, one seeks to calm and reassure the heart and body. The words of Allah s.w.t. mean: "O man kind! Indeed, there has come to you the Qur'an, which is a teaching advice from your Lord, and a cure for the inner diseases that are in your breasts, and also a guidance for salvation, and a mercy for those who believe" (al-Qur'an, surah Yunus 10: 57) (Nor & Siti, 2016).

For a Muslim, the breadth of heart in the form of faith and devotion to Allah SWT is the biggest capital that can reduce the pressure of his life. The pressure of life or the problems he faces will not mean anything because Allah SWT is the only One who brings a way out of every problem (Sartika & Ima, 2019). So that the pressure of a problem that we feel is not burdensome in life, we need to prepare an airy portion of the heart so that all the affairs we do are facilitated by Allah SWT.

#### **D. Implicit Meaning of Learning about Pressure and Qur'anic Verse**

After understanding the basic theory of pressure, we can conclude that pressure is strongly influenced by surface area. The relationship between the two is inversely proportional. One of the messages that we can take for life is about spaciousness. A spacious heart is a heart that does not harbor bad feelings, a heart that is sincere, patient, and wise in dealing with life's problems. All of these things are only owned by someone who believes. The implied meaning can also be found in the Qur'an and Hadith, namely:

#### **QS Al-Insyirah: 94**

أَلَمْ نُشْرَحْ لَكَ صَدْرَكَ

1) *Isn't it We have expanded for you your chest?*

وَوَضَعْنَا عَنْكَ وِزْرَكَ

2) *And We have removed from you your burden,*

الَّذِي أَنْقَضَ ظَهْرَكَ

3) *That weigh down your back?*

وَرَفَعْنَا لَكَ ذِكْرَكَ

4) *And We elevate for you the appellation of your name,*

فَإِنَّ مَعَ الْعُسْرِ يُسْرًا

5) *For indeed after hardship there is ease,*

إِنَّ مَعَ الْعُسْرِ يُسْرًا

6) *Indeed, after hardship there is ease.*

فَإِذَا فَرَغْتَ فَانصَبْ

7) *Then when you have finished (from one affair),*

*work earnestly (another affair),*

وَالِى رَّبِّكَ فَارْعَبْ

8) *And it is only to your Lord that you should hope.*

Pressure is closely related to surface area. As contained in Surah Al-Insyiriah verses 1 and 2, that Allah SWT. has expanded the chest and removed the burden from humans (Sa'adah & Siti, 2021). When a person's heart is spacious, then surely the burden (pressure) that is felt is reduced. With a spacious heart, a person can find a solution to a problem or problem faced, because in every difficulty there must be a convenience as promised by Allah SWT. If someone is open-hearted, then the door of ease will come and can continue the business and work.

"...and no one has been given anything better and more expansive than patience." (H.R Bukhari and Muslim).

The hadith above also guides us in understanding the theory of spaciousness. An open-hearted person is one of the characteristics of a believer.

Learning about pressure means teaching us how to prepare a spacious heart for all problems. With an open heart, the pressure of life that we feel will be smaller so that every problem we experience will be easy to find a solution to. Because pressure has a negative correlation to surface area. "Open your heart, and the pressure in your life will decrease".

## CONCLUSIONS

Stress can be controlled by the size of the cross-sectional area of the heart. No matter how big the problem (force or burden) of life we feel, we can overcome it by managing the spaciousness of the heart. The more spacious a person's heart is, the less pressure they will feel. In the future, it is hoped that further studies can be carried out to explore the connection between the Qur'an and religious science for other physical theories, so that they can be implemented in learning.

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