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## **"The health effects of noise pollution in the environment of Ramadi city schools"**

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### **ABSTRACT**

The research aims to reveal the health effects of noise pollution in the schools of the city of Ramadi and the health and psychological pressures that it leaves on the health and psyche of students and on educational and educational staff . The health effects were reached through a questionnaire that was distributed to the students / Pupils, by (610) questionnaires, and to the educational and educational staff , by (170) questionnaires, After analyzing the results, it was found that noise has health and psychological effects on the schools of the city of Ramadi.

The reason is return to the many of sources of noise and their multiplicity, so the noise pollution rate is between medium to annoying in most of the schools in the city of Ramadi, which is close to the main streets, And other sources of pollution such as generators, markets and industrial workshops. The health effects of noise pollution on educational and educational staff have appeared, most notably, Fatigue, fatigue, headache, lack of focus, tension, nervousness and psychological effects. Therefore, some students and educational staff want to move to another school that is less noisy than their original schools.

### **Introduction**

The problem of noise pollution is one of the environmental problems, and it is an old problem and is not of the present time, But recently, this problem has exacerbated and expanded with the technological development race among the industrially advanced countries. The population has increased significantly and the means of transportation and entertainment have increased, as this problem has become complex and difficult to solve or develop appropriate solutions to save people from its

dangers, especially in major cities where there are many streets and noise increases. If human and his various activities are the main cause of the noise pollution problem in cities.

The study relied on field work by recording the noise levels resulting from the various sources of pollution in and outside the school environment and knowing the most important sources of pollution and their health effects on students / Pupils and on educational and educational staff . The results were reached by means of a questionnaire, as it was found that noise pollution has health and psychological effects in the study area.

After reviewing the effects caused by noise pollution on human health. An assessment was made of the impact of noise on the health and psychology of pupils/ Pupils and the educational staff of the Ramadi schools included in the study.

In this topic, the results reached by the researcher will be reviewed through the questionnaire that was distributed to the sample covered by the study and then sorted, analyzed and represented in the table and graphic figures.

**First: The effect of noise on the educational staff :**

One of the most prominent effects of noise pollution on the educational staff, especially during work, as it leads to poor performance, especially in subjects that require high concentration, The impact of intense noise is reflected on the educational and educational staff , which causes mood swings and lack of performance, especially if it exceeds its limits, i.e. outside the classrooms and the school yard, and reaches the administration room, which affects the comfort of the staff and the administrative work in the school, which needs rest and calm during work. Through field visits to schools, the loud sounds, especially in primary schools, clearly appeared on the comfort of the educational staff during the break.

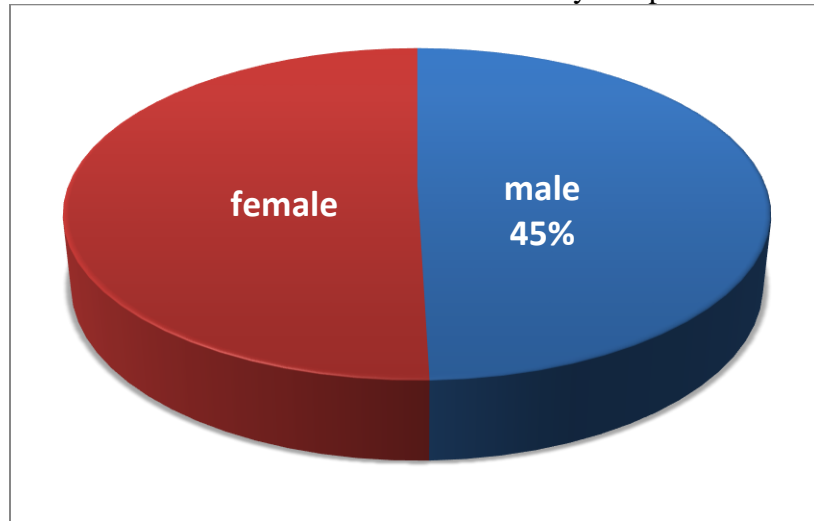
The answers to each question will be discussed in the form and the percentages will be known as follows. The questionnaire form was distributed to the schools included in the study, boys and girls, and to educational and teaching cadres, as the percentage of males was (45.30%) and the percentage of females (54.70%) of the educational cadres participating in answering the questionnaire as shown in Table (1) and Figure (1).

Table No. (1)  
Male and female ratio of the study sample

description	Repetition	%
male	77	45.30
female	93	54.70
Total	170	100

Source: field study

Figure No. (1)  
Male and female ratio of the study sample



Source: Table No. (1)

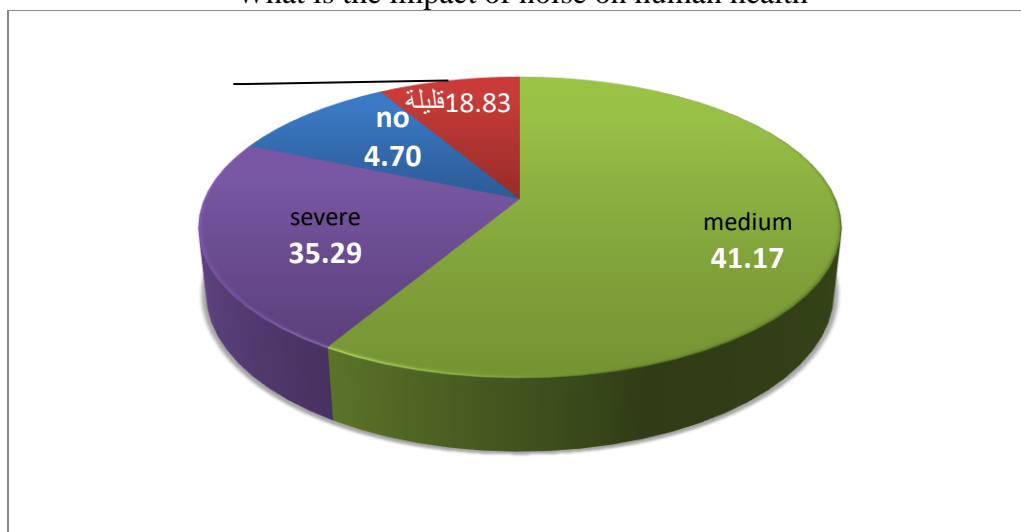
1- (What is the impact of noise on human health) and the answer was as shown in Table (2) and in a form (2) with none (4.70%), few (18.82%), medium (41.17%) and severe (35.29%), It was found through the answers that the noise is medium in the schools of the city of Ramadi and the reason is due to the small number of students/ Pupils in government schools, especially due to one class per day according to the decisions of the Ministry of Education to reduce overcrowding in schools and in one class to avoid infection with the Corona virus pandemic spreading in the world and study area.

Table No. (2)  
What is the impact of noise on human health

Noise effect	Repetition	%
no	4.70	8
few	18.83	32
medium	41.17	70
severe	35.29	60
Total	100	170

Source: field study

Figure No. (2)  
What is the impact of noise on human health



Source: Table No. (2)

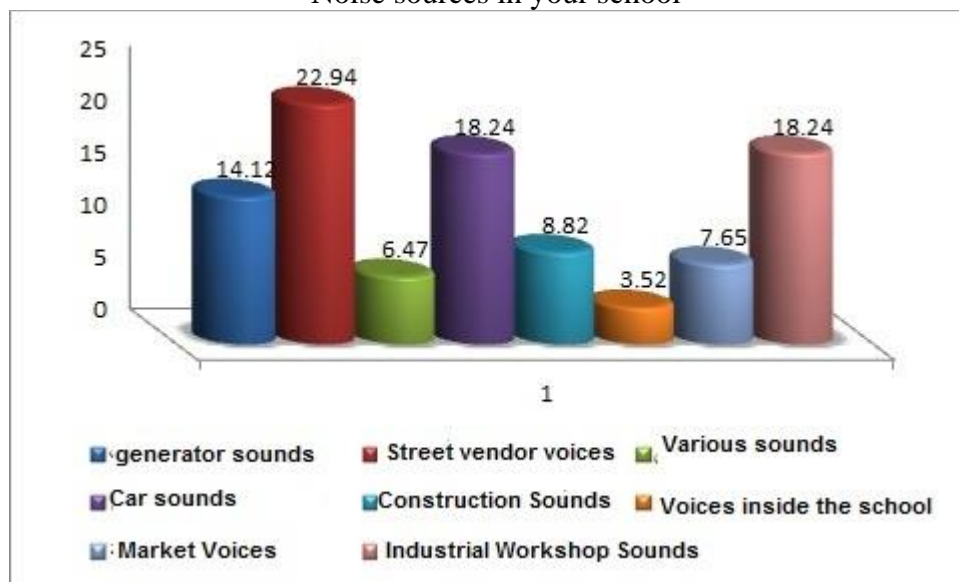
2- Through Table No. (3) and Figure (3), it became clear that the highest percentage was for car sounds (22.94%), and then the voices of street vendors and voices within the school environment came with the same percentage (18.23) for each. The voices of generators, building and construction, various voices, market voices and industrial workshop voices ranked last, according to the following percentages (14.12%, 8.82%, 7.65%, 6.47%, 3.52%), respectively, Where it proved through the study that the most noise sources in the city of Ramadi are the sounds of cars, and the reason is due to the location of most schools on the main streets and the large number of traffic congestion.

Table No. (3)  
Noise sources in your school

Noise sources	Repetition	%
generator sounds	24	14.12
Car sounds	39	22.94
Market Voices	11	6.47
Street vendor voices	31	18.23
Construction Sounds	15	8.82
Industrial Workshop Sounds	6	3.52
Various sounds	13	7.65
Voices inside the school	31	18.23
Total	170	100

Source: field study

Figure No. (3)  
Noise sources in your school



Source: Table No. (3)

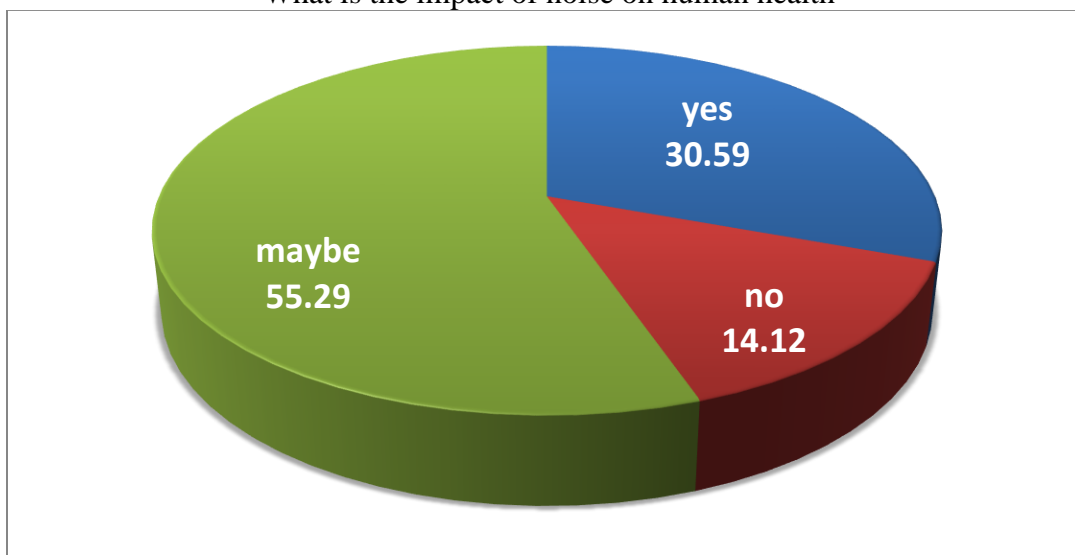
3- (Do you suffer from the problem of noise while you are inside the school) as shown in Table (4) and Figure (4), the answer was yes with a percentage of (30.59%). No (14.12%) and sometimes (55.29%), It was found through the answer that the noise problem is not permanent in most of the schools in the study area, but rather depends on the sources of internal and external noise and the extent of their impact on the school environment, such as the movement of street vendors or the movement of ambulances and police patrols, in addition to the customs and traditions in mourning ceremonies, wedding parties and shootings, Which causes noise reflected in the school environment.

Table No. (4)  
Do you suffer from noise problem while you are in school

description	Repetition	%
Yes	16	2.62
No	110	18.03
Maybe	292	47.87
Total	192	31.48

Source: field study

Figure No. (4)  
What is the impact of noise on human health



Source: Table No. (4)

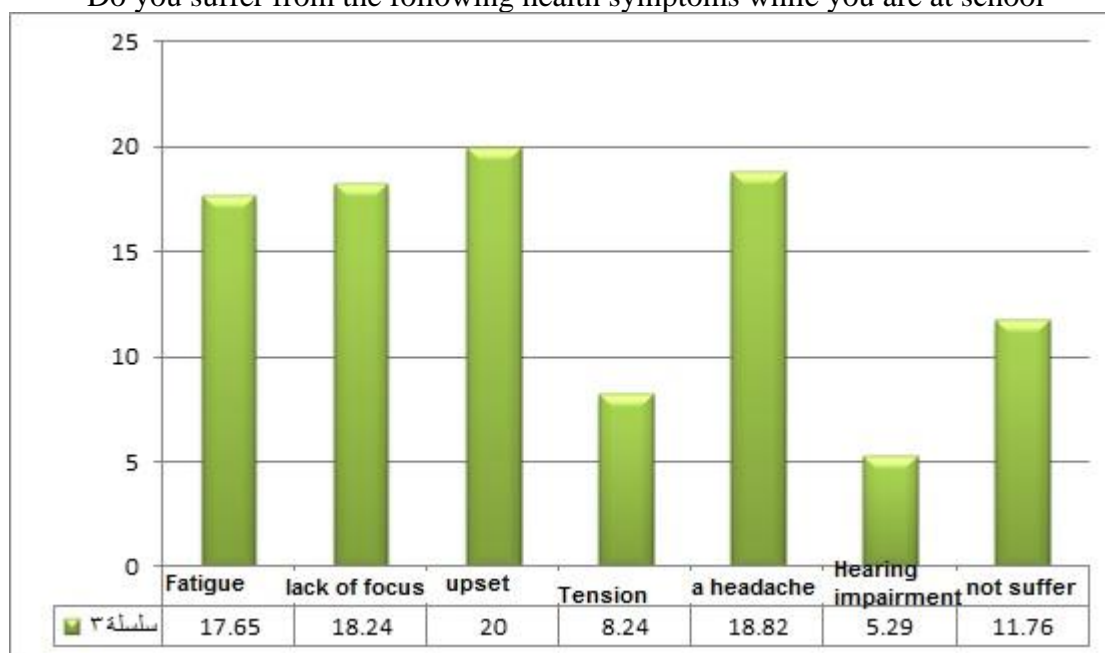
4- (Do you suffer from the following health symptoms while you are at school) and the answer was as shown in Table (5) and Figure (5) Fatigue and exhaustion (17.65%) Lack of concentration (18.24%) Annoyance (20%) Tension and nervousness (8.24%) Headache (18.82) %. Hearing impairment (5.29%) I never suffer (11.76%). Through the answer, it was found that the most common health symptoms that the educational and educational staff suffer from while they are in the schools of the study area is the inconvenience. The reason is due to the intensity of the noise in the schools, whether in the internal or external environment surrounding the school, which is negatively reflected on the health of the educational staff and its symptoms appear in the form of a headache.

Table No. (5)  
Do you suffer from the following health symptoms while you are at school

health symptoms	Repetition	%
Fatigue and exhaustion	30	17.65
lack of focus	31	18.24
upset	34	20.00
Tension and nervousness	14	8.24
a headache	32	18.82
Hearing impairment	9	5.29
I do not suffer	20	11.76
Total	170	100

Source: field study

Figure No. (5)  
Do you suffer from the following health symptoms while you are at school



Source: Table No. (5)

5- (Does noise affect your work during the lesson) as shown in Table (6) and Figure (6), the answer was yes (31.76%), the answer was “no” (15.88%), and the answer was “sometimes” (52.36%), Through the answers, it was found that there is noise that affects the performance of the educational staff in the schools of the city of Ramadi, which are included in the study, which negatively affected the delivery of the scientific material to the mind of the student / Pupils, especially the subjects that require calm and concentration during the lesson, such as physics, chemistry and mathematics.

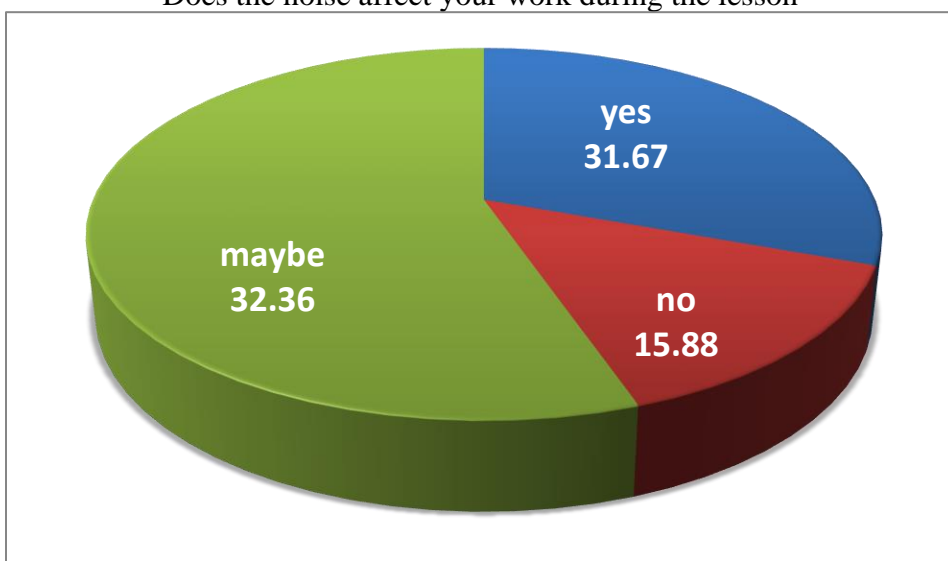
Table No. (6)  
Does the noise affect your work during the lesson

description	Repetition	%
Yes	<b>54</b>	<b>31.76</b>
No	<b>27</b>	<b>15.88</b>
Maybe	<b>89</b>	<b>52.36</b>
Total	<b>170</b>	<b>100</b>

Source: field study

Figure No. (6)

Does the noise affect your work during the lesson



Source: Table No. (6)

6- (Do you want to transfer to another school) As shown in Table (7) and Figure (7), the answers were yes (21.18) and the answer was No (78.82%), and the reason for the answer was no, that is, not to move to another school. The reasons include the proximity of the school to the residence of the teacher or the teacher and the good treatment between the educational staff and the school administration, the complete conviction that all schools are experiencing the same noise problems in the study area, In addition to what is related to the numbers of students/ Pupils, the lower the number, the teacher or teacher feels completely comfortable and able to give the scientific material and deliver it to the recipient better, which increases the number of students/ Pupils.

The answer is yes, i.e. it is preferable to move to another school. The reasons are due to the search for a quieter school, or because of the teacher/teacher's distance from the school, or the teacher or teacher's bad relationship with the administration or educational staff, so it is preferable to move to another school.

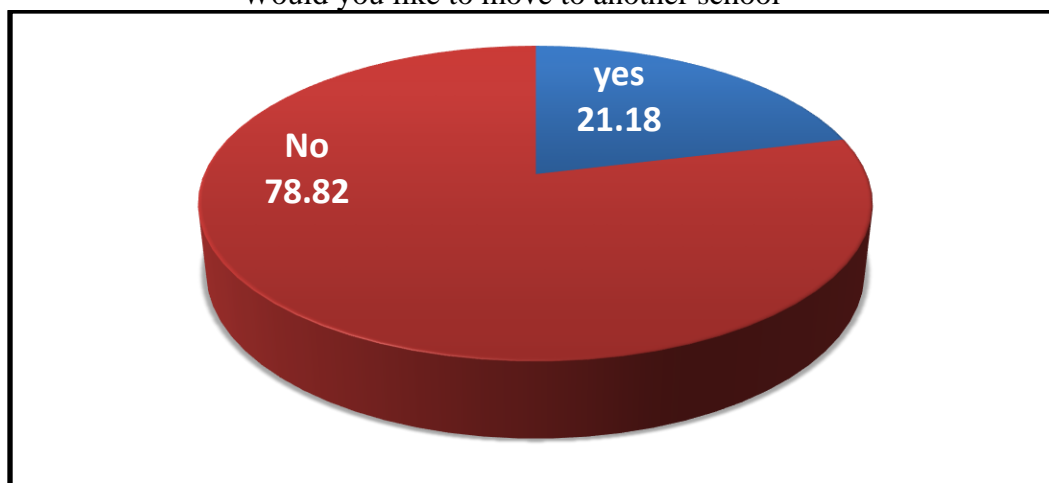


Table No. (7)  
Would you like to move to another school

description	Repetition	%
Yes	36	21.18
No	134	78.82
Total	170	100

Source: field study

Figure No. (7)  
Would you like to move to another school



Source: Table No. (7)

**Second: The effect of noise on the students/students:**

In the previous section, the health effects of noise pollution in the school environment were mentioned, according to its sources and intensity. The noise level was determined by the World Health Organization between (30-40) decibels inside the school environment and that any increase in the noise level above this limit is harmful to the health of individuals and has Negative effects on students and educational staff .

The school environment needs calm in order to complete its work successfully, achieve the educational and educational goal and achieve progress in the academic level. The study showed that the noise level is average in most schools in the study area and the reason is due to the decision of the Ministry of Education to hold one stage per day due to the spread of the Corona pandemic in the world and the study area. Scientific and field experiments have proven that noise has a negative impact on human behavior, which makes people unwilling to provide assistance to those who need it. Studies have also proven that noise increases people’s aggressive tendencies according to the noise level. The higher the noise intensity and proximity to its sources, the greater its impact on the person’s family life and social, which appears on the person of disharmony in most social situations<sup>1</sup>.

Noise also negatively affects the student’s achievement in academic subjects,

<sup>1</sup> Safaa Majeed Abdul-Saheb Al-Mudhaffar, Spatial Variation of Noise Pollution in the City of Najaf, PhD Thesis, College of Arts, University of Al-Kufa, 2011, p. 126.

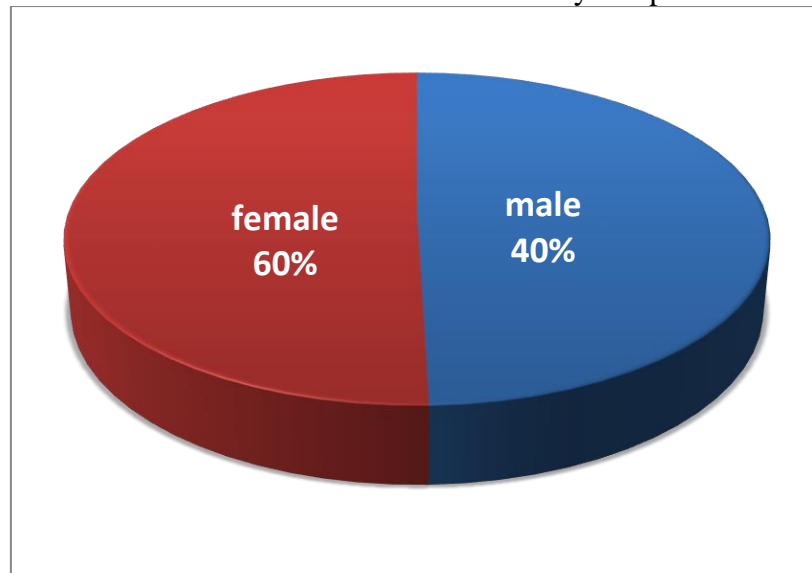
especially those close to sources of noise. It also affects the efficiency and activity of the workers. It also affects the psychological state and manifests its symptoms such as feelings of depression, anxiety and severe distress, which negatively affects the human relations between individuals in the same society. The effect of noise also appears negatively on dictation performance, as I found that a school in Bordeaux, France, which is located on one of the main highways, is exposed to a noise level of 70 decibels, in which there are many spelling errors among students when the windows are left open, and errors are reduced when closing the windows to reduce the noise level. Therefore, the effect of noise appears negatively on students' achievement in study materials and the information that the student obtains, especially when the school is located near permanent sources of disturbance, as well as the contribution of noise to poor perception and language skills of Pupils<sup>2</sup>.

Table No. (8)  
Male and female ratio of the study sample

description	Repetition	%
male	244	40
female	366	60
Total	610	100

Source: field study

Figure No. (8)  
Male and female ratio of the study sample



Source: Table No. (8)

The people most affected by noise pollution in the field of education are students, as noise affects their understanding and acceptance of the information they receive, i.e. noise represents a lack of comprehension for school students in addition to a lack of concentration and inability to solve the simplest arithmetic operations, as well as dizziness, fatigue and exhaustion due to the inability to The nervous system has to work

<sup>2</sup> Nisreen Huda Rashid Al-Karkhi, Noise pollution and its effect on health and educational institutions in the city of Baqubah, PhD thesis, College of Education for Human Sciences, Department of Geography, Diyala University, 2015, p.134.

in an atmosphere charged with noise<sup>3</sup>.

The study showed the reactions of school children between the ages of (11-12) years who are exposed to noise pollution at a rate of (47 dB), they have a decrease in brain activity, which causes a decrease in the ratio of the nervous system, which leads to a decrease in their absorptive capacity and poor vision. An increase in the intensity of noise in the classroom from (30-47 dB) results in a rise in blood adrenaline from (2.70 to 4.11%) and a decrease in blood sugar at the end of the school day, which makes the body a defense against the effect of noise<sup>4</sup>.

Through the questionnaire form that was distributed to male and female students/ Pupils in boys and girls schools, the percentage of males participating in answering the form was (40%), while the percentage of females participating in the answer (60%) as shown in Table (8) and Figure (8).

1- (What is the impact of noise on human health) The answer was as shown in Table (9) and Figure (9) The answer was different. The answer was: No (2.62%), few (18.03%), medium (47.87%), and severe (31.48%). Through the answers, it was shown that the noise rate is medium in the schools of the study area and the reason is due to the time one class per day due to the spread of the Corona pandemic virus, which is reflected in the small number of students / Pupils in the school, in addition to the health ban set by the Iraqi Ministry of Health contributed to reducing noise sources, especially the cars .

Table No. (9)  
What is the impact of noise on human health

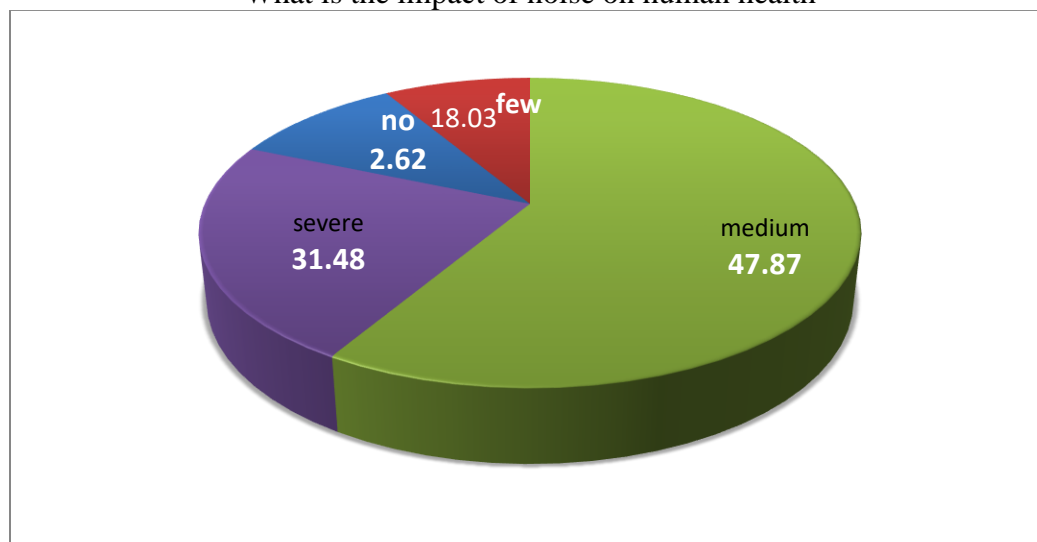
Noise effect	Repetition	%
no	16	2.62
few	110	18.03
medium	292	47.87
severe	192	31.48
Total	610	100

Source: field study

<sup>3</sup> Ali Zine Al-Abidine Abdel Salam, Muhammad Ibn Abd al-Marateh, Environmental pollution is a price for the city, Academic Library, Cairo, 1992, p. 21.

<sup>4</sup> Muhammad Abdo Al-Awdat and others, Pollution and Environmental Protection, 3rd Edition, King Saud University, Riyadh, 197, p. 106.

Figure No. (9)  
What is the impact of noise on human health



Source: Table No. (9)

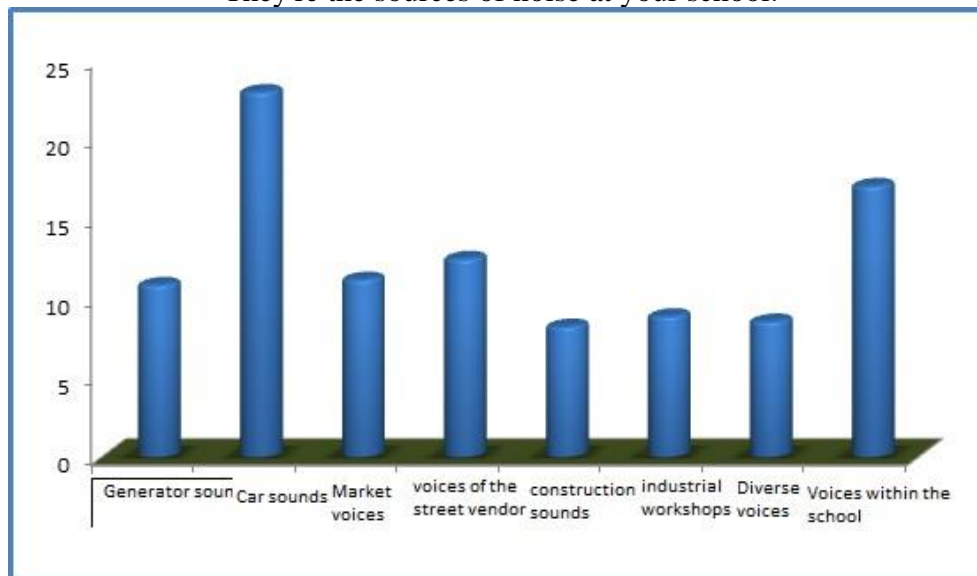
2- (What are the sources of noise in your school) The answer was as shown in Table (10) and Figure (10) and the answer was different and varied. The answer was as follows: the sounds of generators (10.81%), the sounds of cars (22.95%) and the sounds of markets (11.14%) ) and the votes of street vendors by \_12.45%), the sounds of construction and building by (8.19%), the votes of industrial workshops by (8.85%), the diverse votes by (8.52) and the votes within the school environment by (17.04%). Through the study and the questionnaire, it was found that the loudest sources of noise are the sounds of cars, and the reason is due to the large number of cars in the city. Compared to other noise sources.

Table No. (10)  
They're the sources of noise at your school.

Noise sources	Repetition	%
Generator sounds	66	10.81
Car sounds	140	22.95
Market voices	68	11.14
The voices of the street vendor	76	12.45
Constructionand construction sounds	50	8.19
Sounds of industrial workshops	54	8.85
Diverse voices	52	8.52
Voices within the school	104	17.04
Total	610	100

Source: field study

Figure No. (10)  
They're the sources of noise at your school.



Source: Table No. (10)

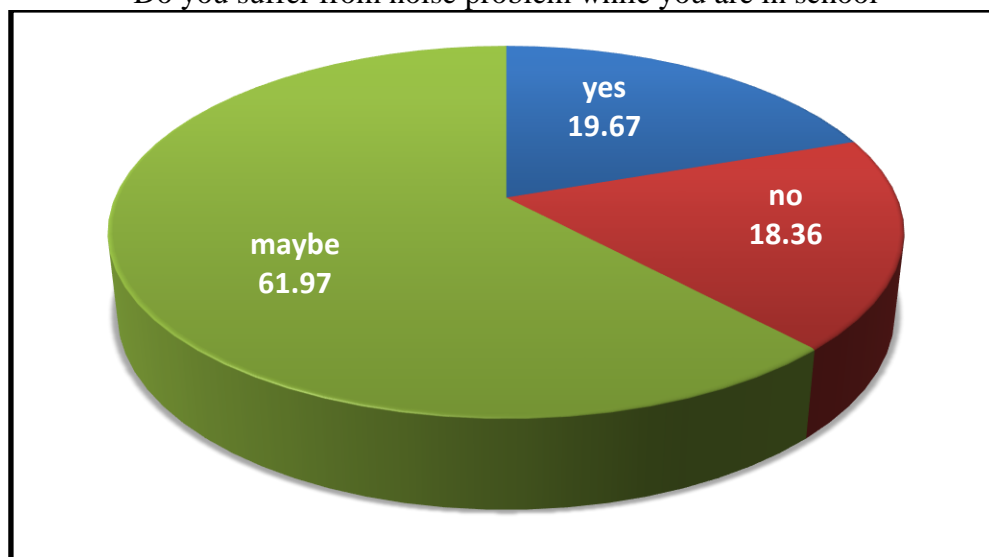
3- (Do you suffer from the problem of noise while you are inside the school) through the schedule (11) And in Figure (11) the answer was yes at a rate of (19.67%), No at a rate of (18.36%), and sometimes with a percentage of (61.97%). Through the answer to the questionnaire, there is a clear effect of noise on the schools of the study area by answering yes or sometimes, but the answer is no focused in primary schools because of the students' lack of awareness of the danger of noise on human health and psychological.

Table No. (11)  
Do you suffer from noise problem while you are in school

description	Repetition	%
Yes	120	19.67
No	112	18.36
Maybe	378	61.97
Total	610	100

Source: field study

Figure No. (11)  
Do you suffer from noise problem while you are in school



Source: Table No. (11)

4- (Do you suffer from the following health symptoms while you are at school) From Table (12) and Figure (12) the answer was as follows: Fatigue and fatigue (5.95%) Lack of concentration (15.74%) Annoyance (20.33%) Tension and nervousness (9.18%) Headache (24.59%) Hearing loss (8.20%) I never suffer (16.07%). Through the form and the answers, it was found that there are different symptoms that affect the students while they are in school. The answer, "I never suffer," is limited to the students of the primary school, as it does not appear at the present time, but it may appear in the future and affect the health of the students.

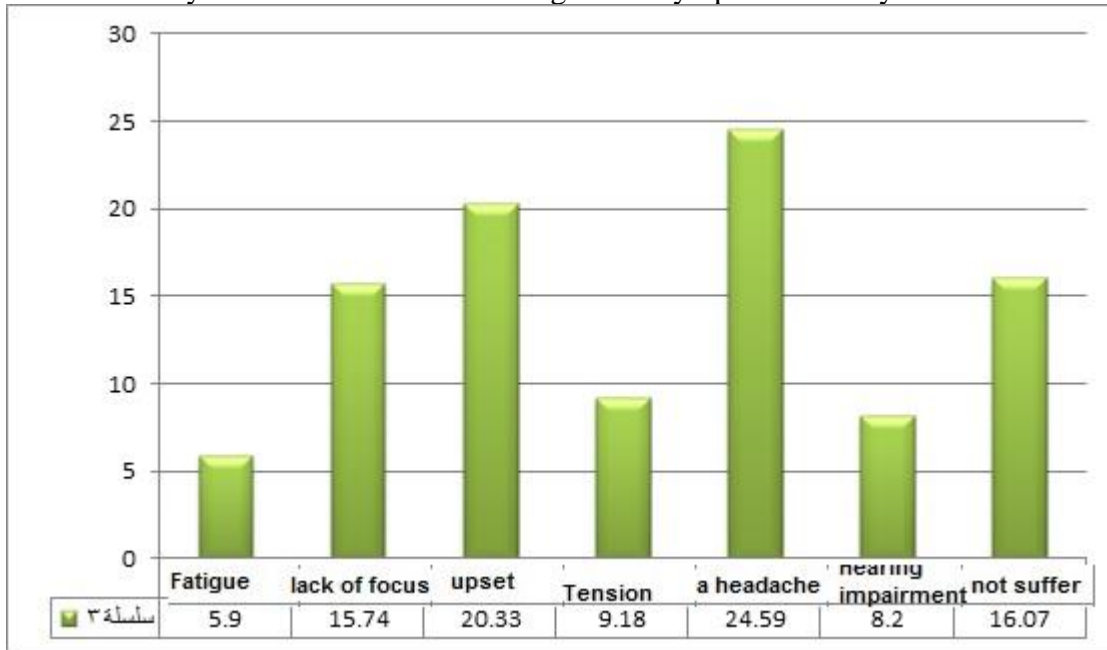
Table No. (12)  
Do you suffer from the following health symptoms while you are in school

health symptoms	Repetition	%
Fatigue and exhaustion	36	5.90
lack of focus	96	15.74
upset	124	20.33
Tension and nervousness	56	9.18
a headache	150	24.59
Hearing impairment	50	8.20
I do not suffer	98	16.07
Total	610	100

Source: field study

Figure No. (12)

Do you suffer from the following health symptoms while you are in school



Source: Table No. (12)

5- (Does noise have an impact on your performance in the exam through Table (13) and Figure (13) The answers were as follows: Yes at a rate of 28.52%), No at a rate of (20.33%) and Sometimes with a percentage of (51.14%). The effect of noise on the performance of students/ Pupils in the exam is observed by answering "No." It was for some smart students and students who did not affect their performance in the exam, as they obtained high marks in various circumstances.

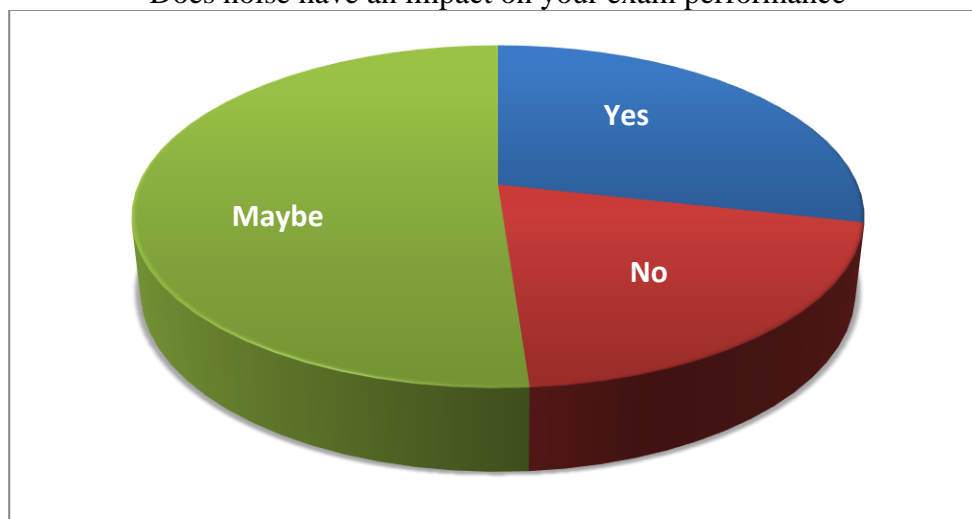
Table No. (13)

Does noise have an impact on your exam performance

description	Repetition	%
Yes	<b>174</b>	<b>28.52</b>
No	<b>124</b>	<b>20.33</b>
Maybe	<b>312</b>	<b>51.14</b>
Total	<b>610</b>	<b>100</b>

Source: field study

Figure No. (13)  
Does noise have an impact on your exam performance



Source: Table No. (13)

6- (Do you want to transfer to another school) The answers were as in Table (14) and Figure (14) The answer was yes at (22.95%) and No at (77.05%) Most of the students do not want to change their schools even if they are exposed to a high level of noise. The reasons are due to the proximity of the school to the student’s residence, the lack of transportation fees in the event of moving to a distant school and the presence of an efficient staff of teachers and teachers, in addition to the good relationship that binds the student with his colleagues Or the educational staff and the school administration.

As for those who answered yes, the reasons are due to a search for a school that contains a better qualified staff than the previous school or after the school for the student’s residence or problems with students or educational staff and the school administration, in addition to the fact that the previous school did not contain the branch in which the student wants to study, so it is preferable to move to another school.

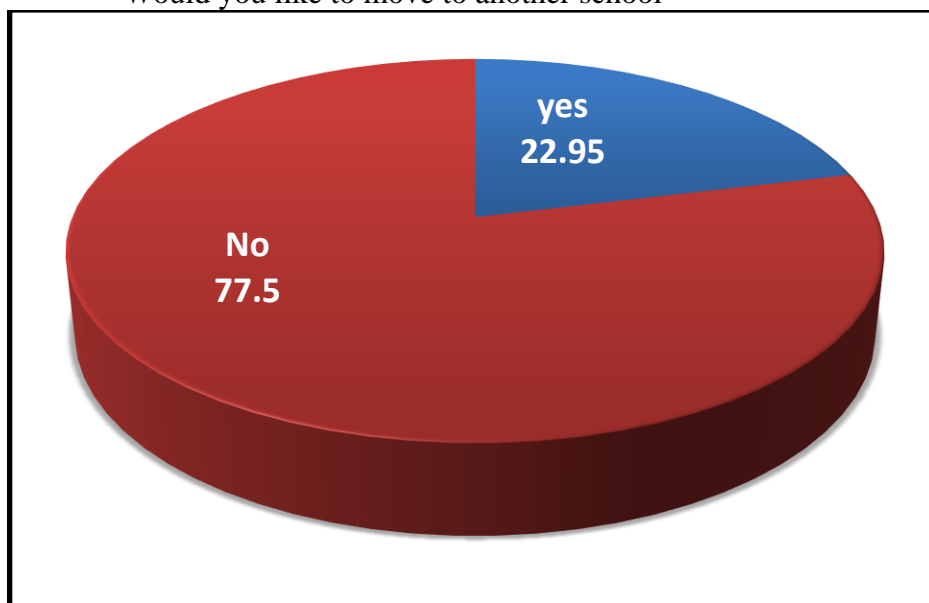
Table No. (14)  
Would you like to move to another school

description	Repetition	%
Yes	<b>140</b>	<b>22.95</b>
No	<b>470</b>	<b>77.05</b>
Total	<b>610</b>	<b>100</b>

Source: field study



Figure No. (14)  
Would you like to move to another school



Source: Table No. (14)

**Recommendations:**

- 1- Redistribution of land uses in the correct manner within the city through the streets and afforestation and surrounding the city with a green belt and increasing the area of parks to reduce noise.
- 2- Keeping schools away from sources of noise, especially markets, main streets, industrial workshops and private generators.
- 3- Educating the population about the dangers of noise pollution through the media or holding cultural and scientific conferences.
- 4- Establish laws that hold accountable anyone who causes noise inside the city, such as shooting bullets, private and home parties, and animal breeders inside the city.

**References**

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- 3- Muhammad Abdul-Awadat and others,, Pollution and Environmental Protection, 3rd Edition, King Saud University, Riyadh, 1997.
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