AL-Mustaqbal University
College of Engineering

case study TITTLED WITH

Efficiency of digital versus manual blood pressure monitors

Supervisied Names:

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Case study

project name	**Efficiency of digital versus manual blood pressure monitors**
Link	**https://uomus.edu.iq/NewDep.aspx?depid=13&newid=68861**
Project Overiew	1)Checking accuracy and reliability: Comparing the readings of digital (oscillatory) devices with those of manual mercury devices to ensure diagnostic accuracy. 2)Safety and usability assessment: If it is among the digital devices for self-use at home without the need for special medical skills, especially for patients with heart and blood disorders. 3)Long-term blood pressure monitoring: Measuring the effectiveness of devices in recording blood pressure over 24 hours (circadian rhythm monitoring) to detect nocturnal hypertension. 4)Error factor analysis: Identifying technical and environmental factors that may affect reading accuracy, such as arm position or the quality of electronic devices. 5)Personal follow-up: Testing the effectiveness of reading storage features to track changes in blood pressure over time and assessing the effect of medications.
Project objective	1) comparison Digital the pressure measurement Devices accuracy evaluation manual with devices 2)Both types Between Reading Reliability bezel sweet 3)Healthy And the practitioner the patient For And comfort usage ease study

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Sustainable Development Goals (SDG)	**Goal 3 (Good health and well_being)** **Goal 4 (Quality Education)**  
Student Name:	**1. Haneen Hussein Jabr** **2. Ruqayyah Maan Hameed** **3. Karrar Abdullah Hussein** **4. Naba Rassim Hussein** **5. Maya Muwaffaq Ali** **6. Fatima Ali Razzaq** **7. Fatima Hussein Abdul Imran** **8. Sakina Hussein Abdul Ameer** **9. Ali Khudair Mohammed** **10. Muna Kadhim Dawood**
Survey registration locations	**The questionnaires were taken from AL_Hilla Teaching Hospital in Babylon.**

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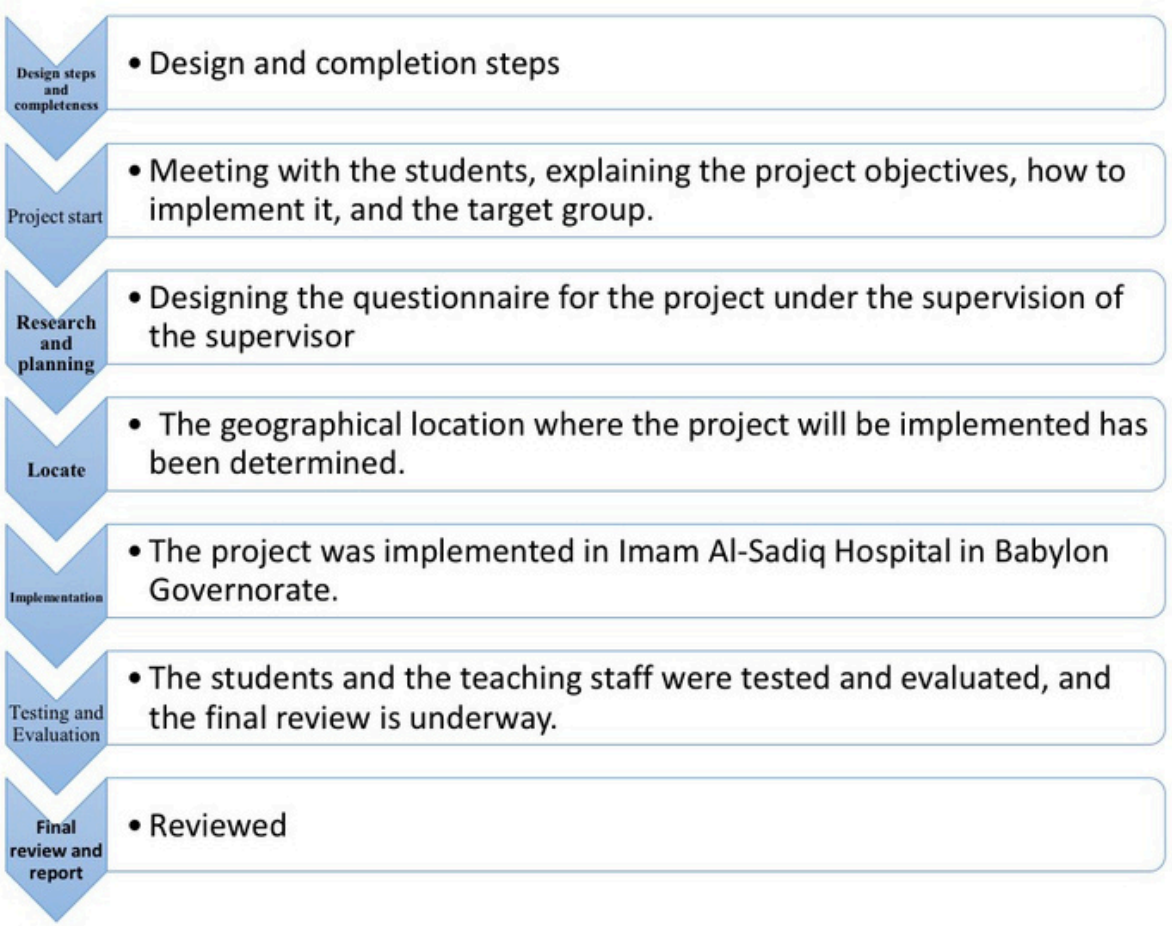
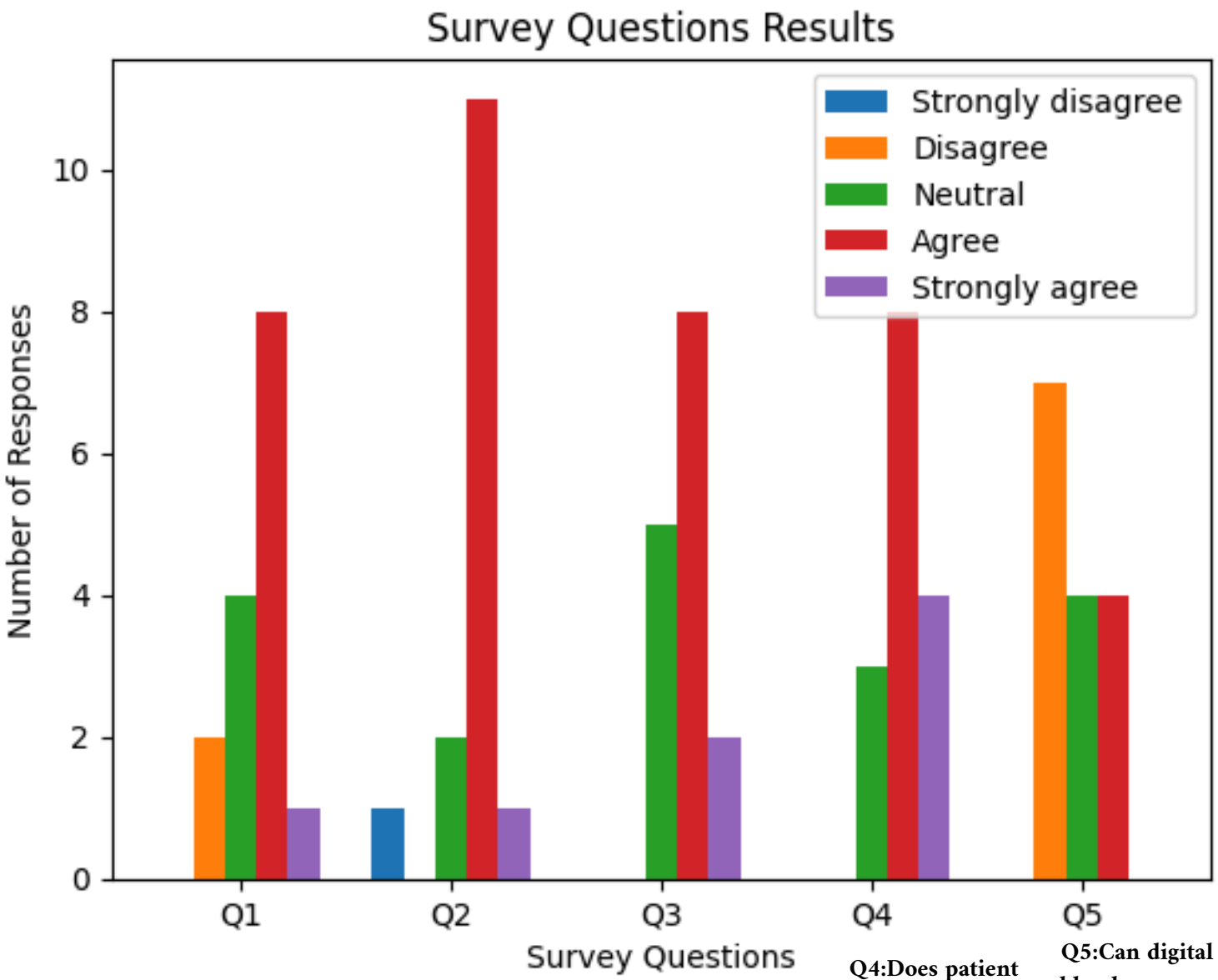


SURVEY Questions Results

Question	I Strongly disagree	I'dont agree	neutral	I agree	I Strongly agree	The total
1. Do digital blood pressure measuring devices provide results that are close to the results of manual devices when used?	0	2	4	8	1	15
2. The ease of using digital blood pressure devices makes them preferable for use.	1	0	2	11	1	15
3. Manual blood pressure devices are more accurate than digital devices when measuring blood pressure.	0	0	5	8	2	15
4. Does patient movement during measurement affect the accuracy of digital devices more than manual devices?	0	0	3	8	4	15
5. Can digital blood pressure measuring devices be relied upon for accurate diagnosis of blood pressure without the need for manual devices?	0	7	4	4	0	15

Survey QUESTIONS Results



Q1: Do digital blood pressure measuring devices provide results that are close to the results of manual devices when used?

Q2:The ease of using digital blood pressure devices makes them preferable for use.

Q3:Manual blood pressure devices are more accurate than digital devices when measuring blood pressure.

Q4:Does patient movement during measurement affect the accuracy of digital devices more than manual devices?

Q5:Can digital blood pressure measuring devices be relied upon for accurate diagnosis of blood pressure without the need for manual devices?

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Digital (electronic) pressure gauges are easy to use for home and self-use, while hand-made pressure gauges (mercury or pneumatic) are more reliable and reliable than their previous uses. Certified digital devices are not very reliable, but are hand-made from latex although expensive for trainees to use.

Digital (electronic) measuring devices: Features: Easy to use, quick and easy to read readings, suitable for personal use at home, additional features (storage of readings). Disadvantages: May be affected by body position, irregular heartbeat, and requires periodic calibration. Preference: Recommended for hypertensive patients for daily monitoring.

Manual measuring devices: Advantages: Very high accuracy if used correctly (especially mercury). Disadvantages: Requires experience, training, and stethoscope, difficult for personal use. Preference: Preferred in clinics and hospitals. a summary:

Section One:General information

Age and Gender Distrbution

Number of Males : **4**

Number of Females:**11**

most Represented Age Group : **20_35 years (14 participants)**

Least Represented Age Group : **Over 35years (1 participants)**

This indicates that most of the participants in the questionnaire are from the young age groups, which may reflect the category of workers in the medical field

Age Group

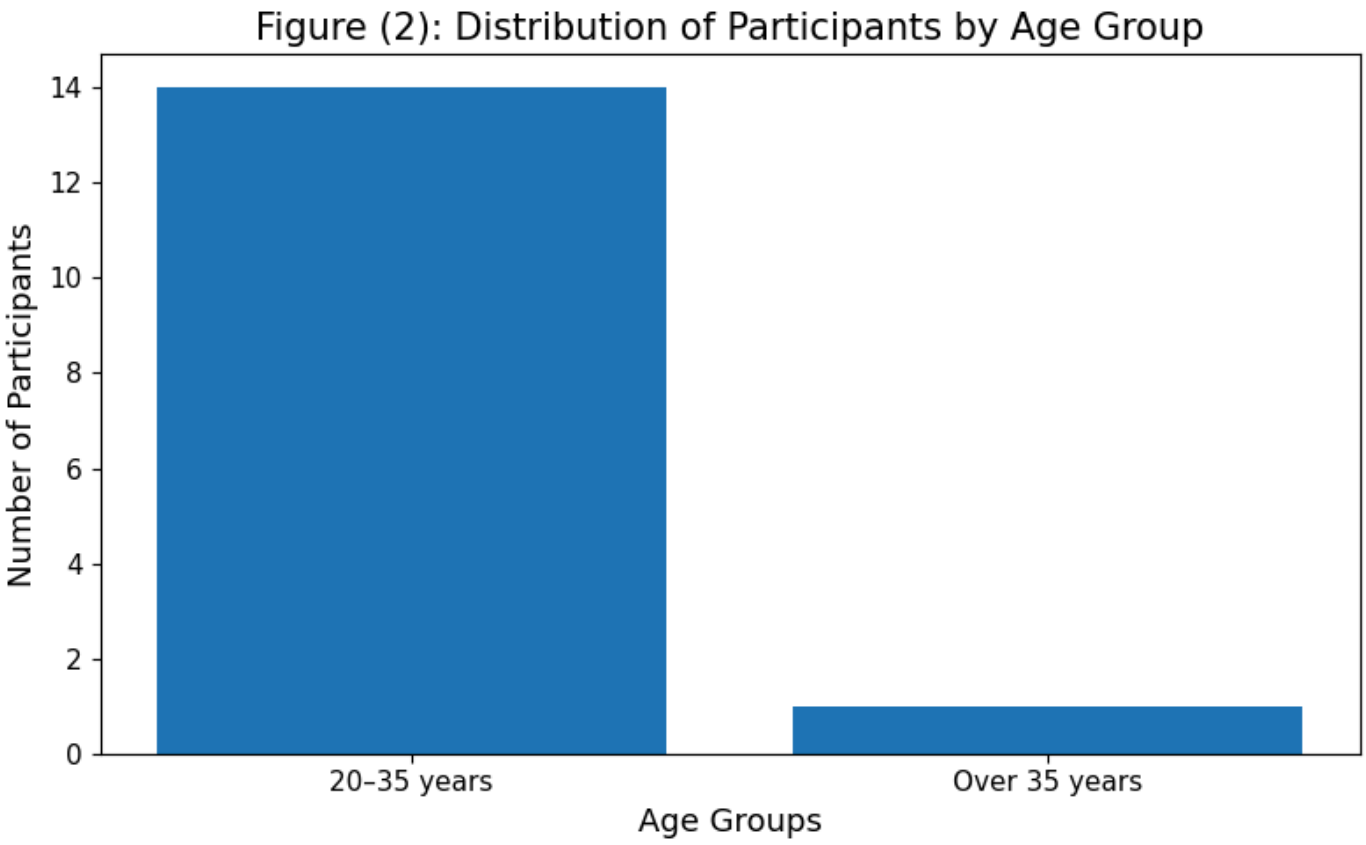


Figure (2): Distribution of Participants by Age Group
Number of Participants
0
2
4
6
8
10
12
14
20–35 years
Over 35 years
Age Groups

Section two:Questionnaire Questions

1)Do digital blood pressure measuring devices provide results that are close to the results of manual devices when used?

The question (Do digital blood pressure measuring devices provide results that are close to the results of manual devices when used? We asked by 15 participants, The survey results indicate that:

(I agree)half of the participant (**53.3% agree**) bellieve that digital blood pressure measuring devices provide results that are close to the results of manual devices when used

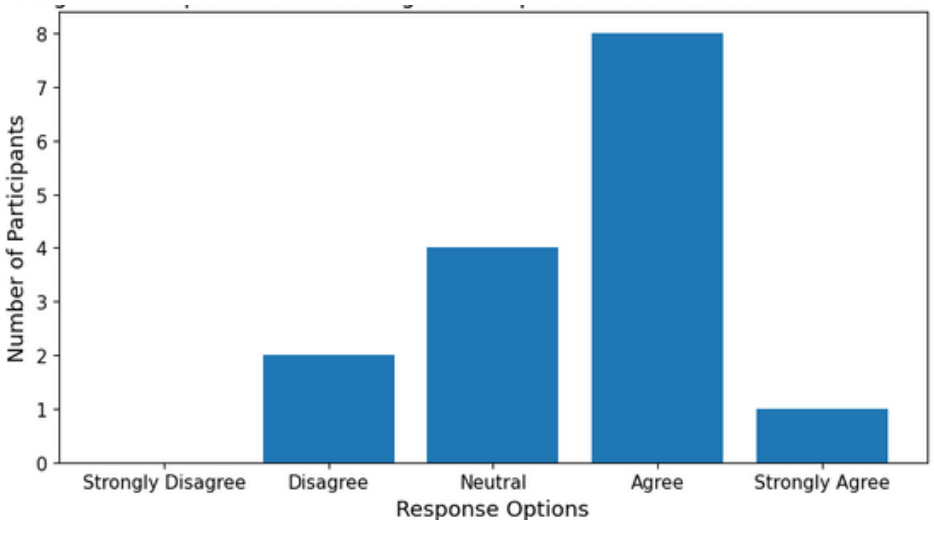
(6.7% I Strongly agree)strongly bellieve that digital blood pressure measuring devices provide results that are close to the results of manual devices when used

(I dont agree + I Strongly disagree)A small number of participants**(13.3%)** stated that the digital blood pressure monitor does not provide results closed to manual blood pressure monitor

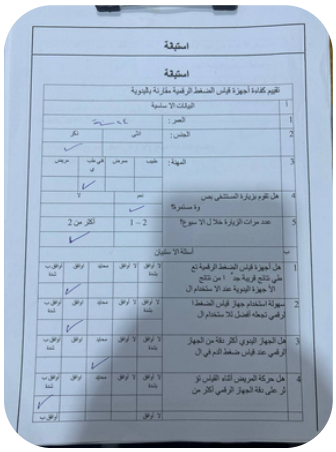
26.7%(neutral) of the participants did not have a decisive opinion

Analysis of the result

The results showed that the majority of participants had a positive attitude towards the accuracy of digital blood pressure monitors; 53.3% of participants agreed, while 6.7% strongly agreed, meaning that 60% of the sample felt that digital devices gave readings close to those of manual devices. In contrast, only 13.3% disagreed.While no participant registered strong opposition, the results also showed that 26.7% of participants were neutral, which may indicate hesitation or a lack of sufficient experience in using these devices.

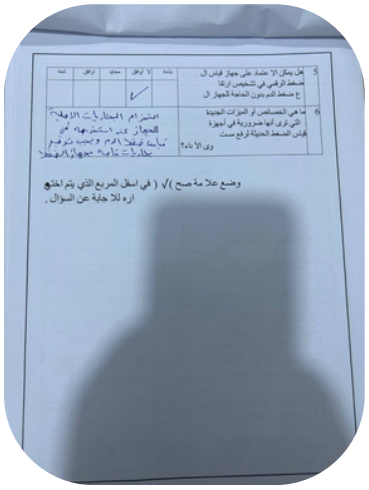


2. The ease of using digital blood pressure devices makes them preferable for use.



The question (The ease of using digital blood pressure devices makes them preferable for use. We asked by 15 participants, The survey results indicate that:

(I agree + I Strongly agree)Most of the participant (**73.3% agree)** , **(6,7% Strongly agree)**bellieve that The ease of using digital blood pressure devices makes them preferable for use.

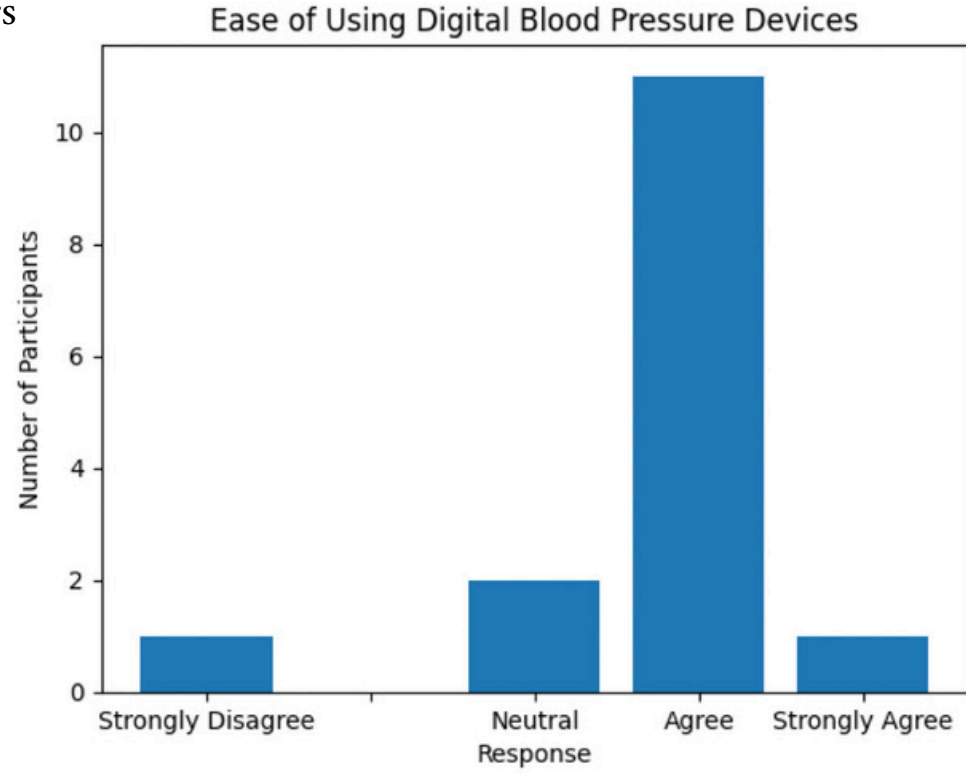


(I dont agree + I Strongly disagree)Only **6.7%** participant disagreed. The ease of use of digital blood pressure monitors makes them a preferred choice.

(neutral)just **13.3%** of the participants did not have a decisive opinion

Analysis of results:

The results of this question indicate that there is a strong positive attitude among participants towards the ease of using digital blood pressure monitors. 80% of participants (73.3% agreed and 6.7% agreed to start) demonstrated their ease of use making these devices their favorite to use. This reflects a high degree of practical variation of these devices among the sample members



3. Manual blood pressure devices are more accurate than digital devices when measuring blood pressure.

The question (Manual blood pressure devices are more accurate than digital devices when measuring blood pressure. We asked by 15 participants, The survey results indicate that:

(I agree)half of the participant **53.3%** bellieve that Manual blood pressure devices are more accurate than digital devices when measuring blood pressure.

(I strongly agree)half of the participant **13.3%** bellieve that Manual blood pressure devices are more accurate than digital devices when measuring blood pressure.

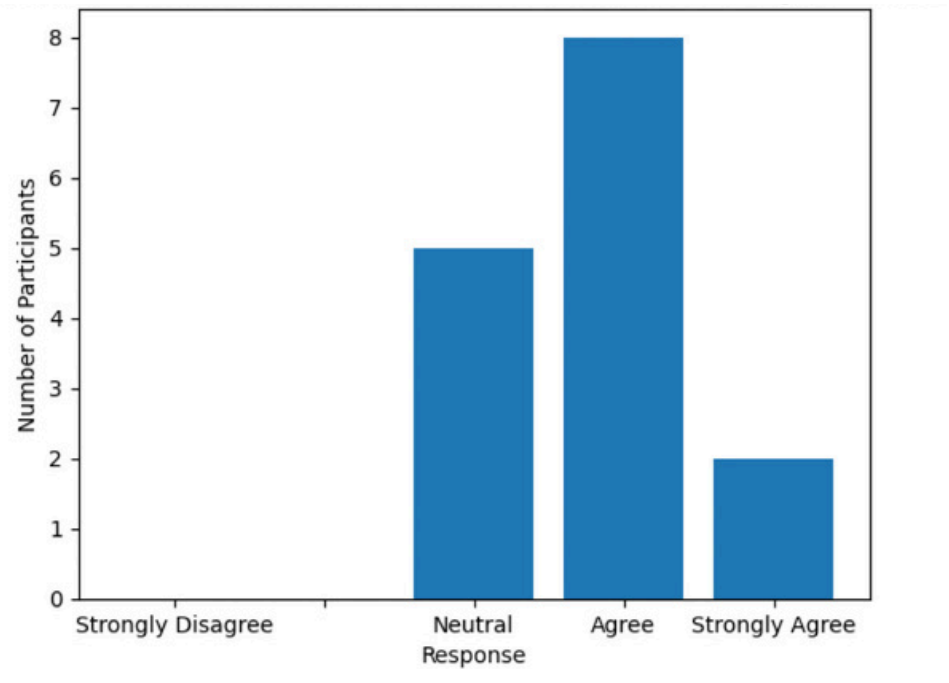
(I dont agree + I Strongly disagree)**0%** The absence of any negative or neutral responses means that Manual blood pressure devices are more accurate than digital devices when measuring blood pressure.

(neutral)just **33.3%** of the participants did not have a decisive opinion

Analysis of results:

The results of this question indicate that the majority of participants believe manual blood pressure monitors are more accurate than digital ones. 53.3% of participants agreed, while 13.3% strongly agreed, meaning that 66.6% of the sample believe manual devices are superior in terms of accuracy.

Conversely, no participant registered an opposing stance, reflecting a lack of rejection of the idea that manual devices are superior. However, 33.3% of participants expressed a neutral position, which may indicate hesitation, a lack of complete conviction, or limited practical experience among some participants in comparing the two types.



4. Does patient movement during measurement affect the accuracy of digital devices more than manual devices?

The question (Does patient movement during measurement affect the accuracy of digital devices more than manual devices? We asked by 15 participants, The survey results indicate that:

(I agree) half of the participant **53.3%** They support that patient movement during measurement affects the accuracy of digital devices more than manual devices.

(I strongly agree) **26.7**%of the participant strongly agree that the movement of the patient during measurement affect the accuracy of digital devices more than manual devices

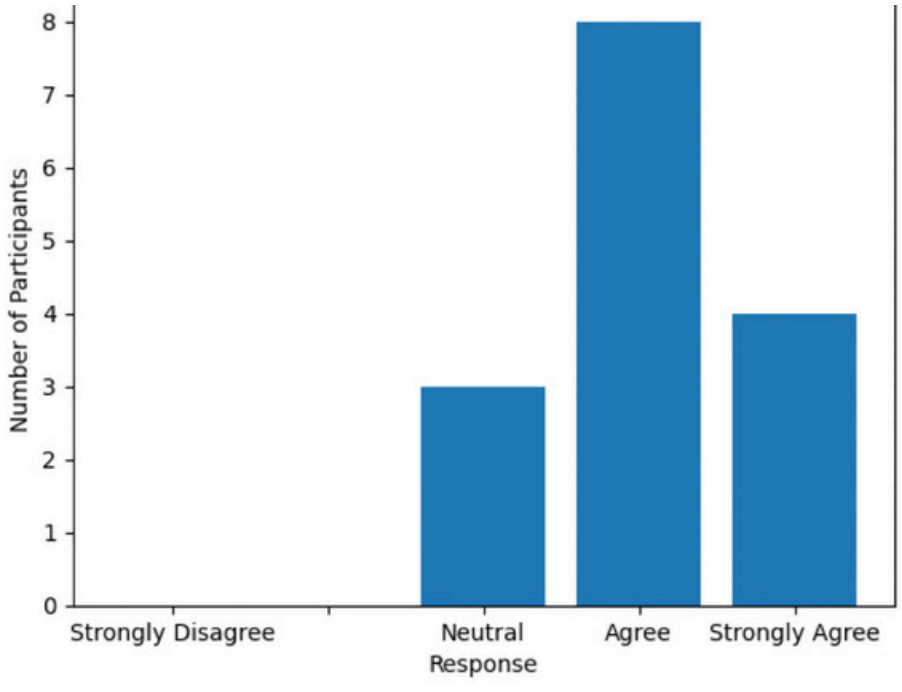
(I dont agree + I Strongly disagree) **0%** The absence of any negative or neutral responses means that Manual blood pressure devices are more accurate than digital devices when measuring blood pressure.

(neutral) 20% of the participants did not have a decisive opinion

Analysis of results:

80% of the sample members agreed or strongly agreed with the movement of patients with greater disabilities on approved digital devices, while no participant expressed disagreement, and 20% remained with a different position.

These results indicate a clear awareness among respondents that digital devices are more sensitive to patient movement during measurement compared to manual devices, which may affect the reliability of measurements in clinical settings where patient movement is difficult to control.



5.Can digital blood pressure measuring devices be relied upon for accurate diagnosis of blood pressure without the need for manual devices?

The question (Can digital blood pressure measuring devices be relied upon for accurate diagnosis of blood pressure without the need for manual devices? We asked by 15 participants The survey results indicate that:

(I agree) **26.7%** of participants They believe that digital blood pressure monitors can be relied upon to obtain an accurate diagnosis without the need for manual devices.

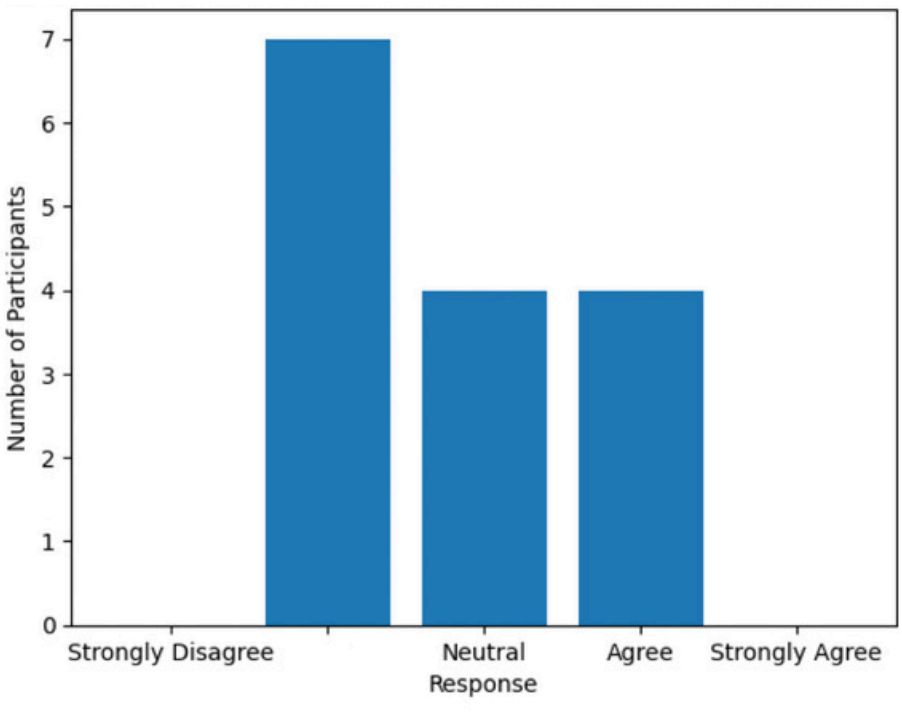
(I don't agree) **46.7%** of participants They believe that digital blood pressure monitors can be relied upon to obtain an accurate diagnosis without the need for manual devices.

(neutral) **26.7%** of the participants did not have a decisive opinion

Analysis of results:

The percentage of people in the Tigris and Euphrates rivers who support the idea of complete reliance on digital devices is higher than the percentage in the Mediterranean.

Four participants (26.7%) were neutral, indicating:either a lack of knowledge or insufficient experience with digital devices



conclusion

challenges:

1) There is Disparities in Readings between Devices Digital And manual, Which He causes some Anxiety I have Users .

2) The quality of devices varies from one user to another.

3) must have experience and knowledge in measuring blood pressure devices.

4) In general, the error in electronic blood pressure measuring devices can range from 5 mm

Result

1) half of the participant (53.3% agree) bellieve that digital blood pressure measuring devices provide results that are close to the results of manual devices when used,(13.3%)disagree,26.7% neutral

2) Most of the participant (73.3% agree) , (6,7% Strongly agree)bellieve that The ease of using digital blood pressure devices makes them preferable for use,6.7 disagree,13.3neutral

3) half of the participant 53.3% bellieve that Manual blood pressure devices are more accurate than digital devices when measuring blood pressure,13.3%strongly agree,0% disagree,33.3%neutral

4) half of the participant 53.3% They support that patient movement during measurement affects the accuracy of digital devices more than manual devices,26.7%disagree,20%neutral

Recommendation

1)from The best that It is done Use Devices Digital As a system complementary And not Alternatively on Devices Manual, especially in medical settings.

2) He should on Users verification from matching Devices Digital for standards medical to ensure its accuracy

3)Maybe to improve accuracy Devices Digital from during Awareness Users around The method correct for measurement to reduc Errors the results on usage wrong