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Health Workers Perception on the Adoption of EMR (Electronic Medical Record). A Comparative Study of Existing Users and Potential Users.

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ABSTRACT
Electronic medical records (EMR) improvise an efficient automated system that rid health care centres from inefficiencies and disadvantages associated with the manual methods of medical record administration and management, additionally providing more benefits that improve the overall outcomes of both patient and health care providers. This study investigates the perception of health workers on the adoption of EMR by assessing their perception on the usability of EMR, usefulness of EMR and their self efficacy of the use of computing systems through a cross sectional survey. The study was carried out as part of the means of identifying the reason for the low adoption of EMR, despite the benefits it offers. Results of the study revealed that over 75% of the respondents have a positive perception of EMR. As such health worker perception may not be a hindrance to the adoption of EMR but could be a factor influencing the use of EMR.

Keywords:
Electronic Medical Record,
Perception,
Usefulness,
Ease of use,
SelfEfficacy.

INTRODUCTION

EMR (Electronic Medical Record) is an automated record system that improvises in the efficient and accurate management and record keeping of health care record information such as patient record and documentation, staff record, lab investigation, pharmacy inventory, facility record (wards, beds, equipment count, e.t.c). (Zongda et. al 2022). From a site observation, it is evident that many health care centers up till date are still acquainted and comfortable with the manual methods of record keeping and management. However, as the volume of the record increases, these methods could be disadvantageous to these centres due to productivity lapses such as stressful and time consuming process of finding patient records, increased queuing delay for patient e.t.c. And also demanding cost of regular files and paper purchases, shelves and store room, cost of compensating for loss record e.t.c. The introduction of Electronic Medical Record improvises an efficient automated system that rid Health Care Centre from inefficiencies and disadvantages associated with the manual methods, Additionally provides more benefits that improve the overall outcomes of both patient and Health Care Providers. An EMR installation can exist in various platforms such as standalone systems, software installed on a desktop platform, web-based platform, mobile platform e.t.c.

A minimal cost for the operation of EMR will include a mobile phone with data for network connectivity and a remote server hosting the EMR Platform. Despite the benefits of EMR, The rate at which it is adopted in Nigeria is slow (Adeyeye et. al, 2024; Abisola et. al 2024). As part of the means of identifying the reason for this low adoption, this study intends to determine health workers' opinion on EMR by investigating their perception on the adoption of EMR. Several studies have been conducted as a means to identify the reason for low adoption of EMR (Electronic Medical Record) among health workers. This study contributes to identifying the reason for low adoption of EMR in Nigeria, by investigating Katsina State health workers' perception on the adoption of EMR.

Related Works

The introduction of EMR (Electronic Medical Records) comes with some challenges that hinders its adoption. In the study conducted by Ayse, Mehmet and Kadir (2023). to determine the attitude of health workers towards EHR (Electronic Health Record) in communication and medical information sharing identified the existence of distrust in the use of EHR among health workers. Also, Gabriel et.al (2020) in their cross sectional survey study for assessing health workers perception towards EMR.

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The study results revealed that poor internet, power outage, information overload and patient privacy concerns are some of the challenges to adoption of EMR. Nathan et. al, (2024), in their mixed-method study (survey and semi-structured interview) they explored the perception of health workers and factors influencing their use and acceptance of EHR, the outcome of their study revealed that few health workers have negative perception on EMR due to patient privacy and confidentiality concern and some external factors (unstable internet and power supply). Iyanuoluwa, maria, busayo & stella (2022) employed a descriptive cross-sectional survey to assess health workers in primary health care centre perception on integration of EMR into their practice. Part of the study outcome revealed that unavailability of knowledge support personnel and health worker limited or lack of computer literacy training are considered as some of the challenges hindering EMR integration.

Despite these challenges studies have shown that a significant number of health workers have positive perception on EMR (Electronic Medical Record). For example Adeyeye et. al, (2024), investigated the perception to use EMR among medical students in Nigeria, through a cross sectional survey, the outcome of the investigation indicated a significant percentage of the respondents (68%) have a positive perception about EMR, while the remaining 32% have fair perception on EMR. Ayotunde et. al, (2024), also conducted a similar study using health workers as respondents, the study result indicated that significant (over 78 percent) reported a positive perception of EMR in terms of its ease of use and usefulness. Gabriel et.al (2020) also conducted a cross sectional survey assessing health workers perception towards EMR. The study results show that the majority of the respondents have positive perception towards EMR, among the advantages identified are reduction in error, paperwork and administrative cost. Mu'awiyah, Ahmed, Ayodeji & Joshua (2021) conducted a study to understand health workers knowledge, attitude and perception of EMR employing a cross-sectional survey among other methods, the result of the study revealed that majority of the respondent have a fair knowledge and good perception of the use of EMR while all of the respondent have good attitude towards it.

Evidence from studies also revealed that the positive perceptions of Health workers' towards EMR (Electronic Medical Record) have an impacting influence on the use of EMR. In Adio and Oladipo (2022) investigation to determine the relationship between the use of EMR and health worker perception of EMR through a survey study, their study revealed that health worker perception significantly influenced the use of EMR. Nathan et. al, (2024), also suggested that health workers perception can influence the use of EMR, in their mixed-method study (survey and semi-structured interview) they explored the perception of health workers and factors influencing their use and acceptance of EHR, the outcome of their study revealed that majority of health workers expressed satisfaction in the use and usefulness of EMR. Reka, Supriyantoro and Rian (2025) analyzed the influence of health workers perception on ease of use, and usefulness of EMR and also their self efficacy and attitude on the use of EMR, the study revealed that workers perception in terms of convenience, usefulness, of EMR and their self efficacy and attitude has an influence on the actual use of EMR.

It is also evident that, in addition to Health Workers Positive perception of EMR(Electronic Medical Record), their level of computer knowledge and training on the use of EMR also contribute toward the adoption of EMR. Vimala et. al, (2023) assessed the perception and satisfaction of health workers toward EMR using a cross sectional survey, among other methods used. Part of their assessment discovered that involvement of health workers in EMR development is crucial and also workers that receive training on EMR use reported higher satisfaction on the use of EMR. Mu'awiyah, Ahmed, Ayodeji & Joshua (2021) in their study to understand health workers' knowledge, attitude and perception of EMR, found that health workers' level of computer literacy have a linear relationship with their knowledge of EMR. Faniea, Dwi, I and Blacius (2025) Analyze health workers perception and barriers to EMR usage through a systematic review. Study shows that health workers' positive perception is dependent on training , self efficacy and computer skills. And also computer literacy, training delivery and support are necessary for effective EMR operation. Patricia, Resty, Joan and Jake (2024) in a quantitative research(descriptive, correlational design), they determined the interrelationship between health worker personal characteristics, self efficacy and perception of EMR. Most of the respondents in the study have positive perception and self-efficacy of the use of EMR and their personal characteristics include good typing skills, EMR training, moderate experience with EMR, young adults with bachelor degrees. The study indicated that Health worker personal characteristics have influence on their perceptions of EMR and self-efficacy, whereas their perceptions of EMR influence their self-efficacy of EMR. Habtamu,Sisay,Alex and Ermias (2022) Investigate Health Workers readiness to use EHR through a cross- sectional study, study reveals that 52.8% of the respondents have good readiness level and that computer literacy, access to computers at health care centre, attitude towards EHRs, awareness about EHRs, perceived benefit, and perceived technology self-efficacy were significantly associated with the overall health care providers' readiness to use EHR. Hendra, Rizki, Aem and Julhan (2024) assess the Effect of EMR training towards health worker readiness to use EMR using a meta-analysis and systematic review methods, result reveals that EMR

training increase health worker readiness to use EMR and health workers that receive EMR training are better prepared to use EMR than those who do not receive. Purwa, Didik and Bhisma (2024) Conducted a meta-analysis and a systematic review study to identify the factors associated with health worker readiness to use EMR, their study identified that good computer literacy, computer access, high perceived benefits, high self-efficacy, EHR training, and technical support promote the readiness for EHR adoption among health workers. Mohammedjud (2020) assesses health workers' intention to use EMR. The study reported performance expectancy, effort expectancy, social influence, facilitating condition and computer literacy to be the factors positively associated with the intention to use.

MATERIALS AND METHODS

The study employs a quantitative methodology of research through a cross sectional survey, for investigating health workers perception on the adoption of EMR. The questionnaire consists of two sections. The first section contains questions about respondents bio data and a question seeking to know if a respondent has experience of the use of EMR. The second section is made up of three items, these items contain statements to identify health workers general self efficacy on the use of computing systems, their perceived ease of use of EMR and their perceived usefulness of EMR. Each statement in the item consists of four options with the range (Strongly Agree, Agree, Disagree, Strongly Disagree). Respondents choose from these options in order to determine their opinion about each statement. Table 1 presents the items in the questionnaire.

Table 1. Questionnaire Items.

Item 1 (Respondents Self Efficacy of the use of Computing system)
I find it easier to do my work with paper, pen and files than using a computer.
I would prefer to fill online application, type my document and send my mail on my own than to have someone do it for me at a computer centre.
I rather prefer to take my time to search for a file on a shelf than to use a computer to search and retrieve a patient information.
I would prefer to do any clinical documentation with a paper and pen than using a computer.
I have little experience using a computer to perform basic tasks.
Even with the provision of a computer support expert, I would still prefer not to do my work with a computer.
Item 2 (Respondents Perceived Ease of use of EMR)
It is difficult to use an Electronic Medical Record.
It is easy to learn how to operate an Electronic Medical Record.
It is Frustrating to interact with an Electronic Medical Record.
I would easily remember how to perform tasks using an Electronic Medical Record.
It takes a lot of effort to become an expert at using Electronic Medical Record.
Item 3 (Respondents Perceived Usefulness of EMR)
Electronic Medical Record will enable me to accomplish task more quickly.
Electronic Medical Record will give me a greater control over my work.
Electronic Medical Record will improve my productivity.
Electronic Medical Record will allow me to accomplish more work than would otherwise be possible.

Data Collection

100 copies of a survey questionnaire was distributed across over 5 Health Care Centres in Katsina State of Nigeria. Out of these 100 questionnaires, over 40 were recovered, out of the recovered questionnaires, some contained incomplete data and only 31 were recorded and used for this study. The questionnaire was administered to both existing users of EMR and potential users (non-users). The following figure 1 and 2 present a chart of the questionnaire respondent category and their profession.

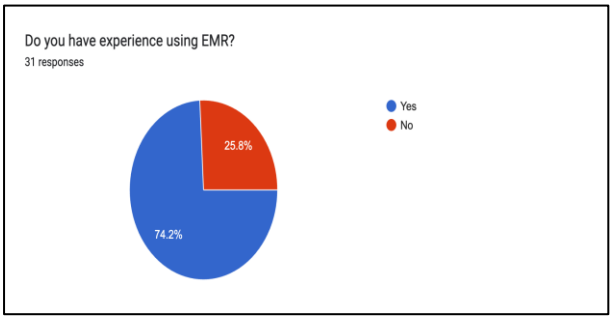

Figure 1 Respondents Category.

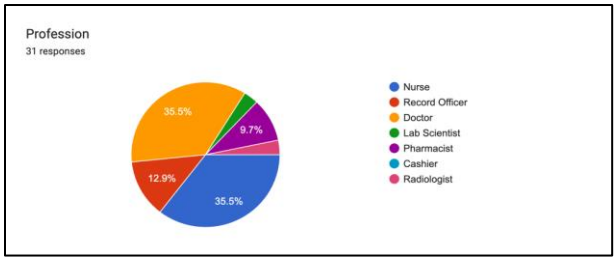

Figure 2 Respondents Profession.

Data Analysis

The data collected from the questionnaire were analysed through the identification of the overall mean and central tendency of the responses. Descriptive statistical technique was used in reporting and interpreting the results. In order to identify the mean and standard deviation of the responses from the respondent. The negative statements in each item of the questionnaire were transformed to positive statements and the response options were scaled in the following order. Table 2 and 3 presents the response option scale and the transformed statements respectively.

Table 2 Response option scale.

Response options	Scale value	Range
Strongly Agree	4	3.75 - 4.00
Agree	3	2.50 - 3.74
Disagree	2	1.25 - 2.49
Strongly Disagree	1	1.00 - 1.24

Table 3. Transformed Statements.

Item 1 (Respondents Self Efficacy of the use of Computing system)
I DO NOT find it easier to do my work with paper, pen and files than using a computer.
I DO NOT prefer to take my time to search for a file on a shelf than to use a computer to search and retrieve patient information.
I DO NOT prefer to do any clinical documentation with a paper and pen than using a computer.
Even with the provision of a computer support expert, i WOULD PREFER to do my work with a computer.
Item 2 (Respondents Perceived Ease of use of EMR)
It is NOT difficult to use an EMR.
It is NOT frustrating to interact with an EMR.
It DOES NOT take a lot of effort to become an expert at using EMR.

The negative statements are found in item 1 and 2 of the questionnaire and the changes made to the statement are in upper case letter.

RESULTS AND DISCUSSION

The data collected from the questionnaire were analysed and reported using a descriptive statistical technique. the overall mean and central tendency of the responses were determined. Figure 3 and 4 present a bar chart illustrating respondents' self-efficacy of the use of computing systems.

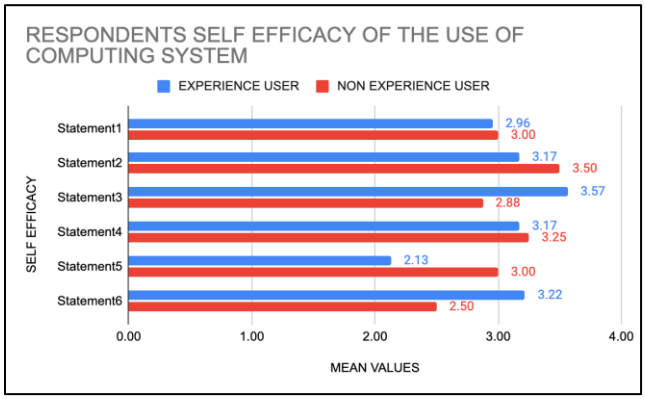

Figure 3. Mean Value of the response.

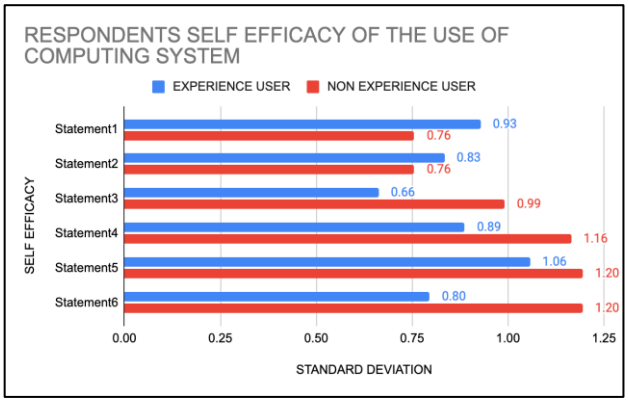

Figure 4. Central Tendency of the response.

The Item (Health Workers self efficacy of the use of computing system) consist of six statements. Figure 3 shows that, the majority of the respondents, both

experienced and non-experience users have positive self-efficacy of the use of computing systems (responses from Most of the statements 5 out of 6 were positive). Statement 1 in figure 3 and 4 indicates that a significant number of the respondent (experience and non-experience) agrees to find using a computer to do their work easier than with paper, pen and files. Also, Statement 2 in both figure 3 and 4 indicates that a significant number of the respondents (experience and non-experience) agree to prefer to fill an online application, type their document and send mail on their own than to have someone do it for them at a computer business centre. Statement 3 in figure 3 and 4 indicates that a significant number of the respondent (experience and non-experience) agrees to not preferring to take their time to search for a file on a shelf than using a computer to search and retrieve patients information. Statement 4 in figure 3 and 4 also indicates that a significant number of the respondents (experience and non-experience) agree to not prefer to do any clinical documentation with a paper and pen than using a computer, however the variation for non-experience users is high.

Statement 5 in figure 3 indicates that a significant number of the respondents with EMR experience disagree with having little experience using computers to perform basic tasks. However figure 4 shows that variation for the indication is high. Whereas, a significant number of respondents with no EMR experience agree with statement 5, though the variation is also high. Statement 6 in figure 3 and 4 both indicates that a significant number of the respondents (experience and non-experience) agree to do their work with a computer even with the provision of a computer support expert, though the variation for non-experience users is high. Table 4 is a report of the mean and standard deviation of the respondents self-efficacy of the use of computing systems.

Table 4 Respondents Self Efficacy of the use of Computing systems.

	Statements	Mean	Standard Deviation
	Experience Users		
1	I DO NOT find it easier to do my work with paper, pen and files than using a computer.	2.96	0.93
2	I would prefer to fill online application, type my document and send my mail on my own than to have someone do it for me at a computer business centre.	3.17	0.83
3	I DO NOT prefer to take my time to search for a file on a shelf than to use a computer to search and retrieve a patient information.	3.57	0.66
4	I DO NOT prefer to do any clinical documentation with a paper and pen than using a computer.	3.17	0.89
5	I have little experience using computer to perform basic task.	2.13	1.06
6	Even with the provision of a computer support expert, I WOULD PREFER to do my work with a computer.	3.22	0.80
	Non-Experience Users		
1	I DO NOT find it easier to do my work with paper, pen and files than using a computer.	3.00	0.76
2	I would prefer to fill online application, type my document and send my mail on my own than to have someone do it for me at a computer business centre.	3.50	0.76
3	I DO NOT prefer to take my time to search for a file on a shelf than to use a computer to search and retrieve a patient information.	2.87	0.99
4	I DO NOT prefer to do any clinical documentation with a paper and pen than using a computer.	3.25	1.16
5	I have little experience using computers to perform basic tasks.	3.00	1.20
6	Even with the provision of a computer support expert, I WOULD PREFER to do my work with a computer.	3.25	1.20

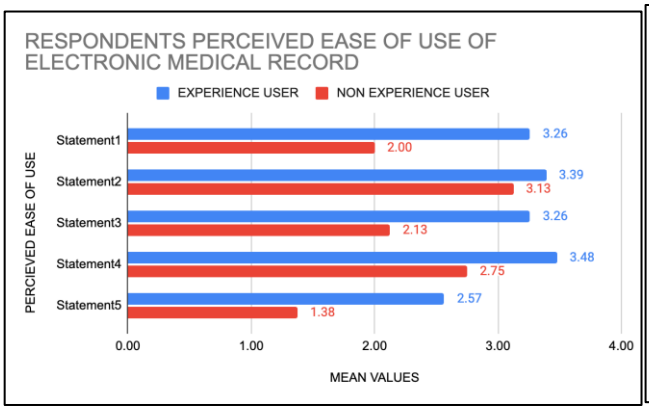

Figure 5 Mean Value of the response.

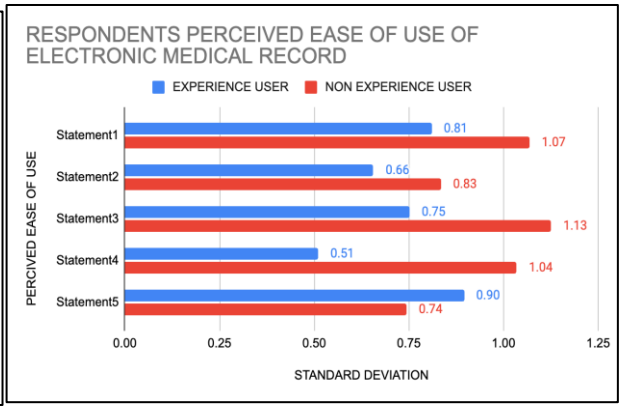

Figure 6 Central Tendency of the response.

Figure 5 and 6 are bar charts illustrating the respondents perceived ease of use of EMR (Electronic Medical Record). Statement 1 in figure 5 shows that a significant number of the respondents with EMR experience agree that EMR is not difficult to use, while a significant number of respondents with no EMR experience disagree with the statement, though the variation of responses from the non EMR experience respondents was high. Statement 2 in figure 5 and 6 shows that a significant number of the respondents (experienced and non-experience users) agree that it is easy to learn how to operate an Electronic Medical Record. Also statement 3 in figure 5 and 6 indicates that a significant number of the respondents with EMR experience agree that interacting with an EMR is not frustrating. While the respondents with no EMR experience that disagree with Statement 3 were significant, the variation of the responses was high. Statement 4 in figure 5 and 6 shows that a significant number of respondents (experienced and non-experience users) agree that they can easily remember how to perform tasks using an Electronic Medical Record, though the variation of the responses was high for non-experience users.

Statement 5 in figure 5 and 6 indicates that a significant number of respondents with no EMR experience disagree that becoming an expert at using EMR does not take a lot of effort, however a significant number of respondents with EMR experience agree with statement 5. Table 5 shows a report of the mean and standard deviation of the respondent perceived ease of use of EMR.

Table 5 Respondent Perceived Ease Of Use Of EMR

	Statements	Mean	Standard Deviation
	Experience Users		
1	It is NOT difficult to use an EMR.	3.26	0.81
2	It is easy to learn how to operate an Electronic Medical Record.	3.39	0.66
3	It is NOT frustrating to interact with an EMR.	3.26	0.75
4	I would easily remember how to perform tasks using an Electronic Medical Record.	3.48	0.51
5	It DOES NOT take a lot of effort to become expert at using EMR.	2.57	0.90
	Non Experience Users		
1	It is NOT difficult to use an EMR.	2.00	1.07
2	It is easy to learn how to operate an Electronic Medical Record.	3.13	0.83
3	It is NOT frustrating to interact with an EMR.	2.13	1.13
4	I would easily remember how to perform tasks using an Electronic Medical Record.	2.75	1.04
5	It DOES NOT take a lot of effort to become expert at using EMR.	1.38	0.74

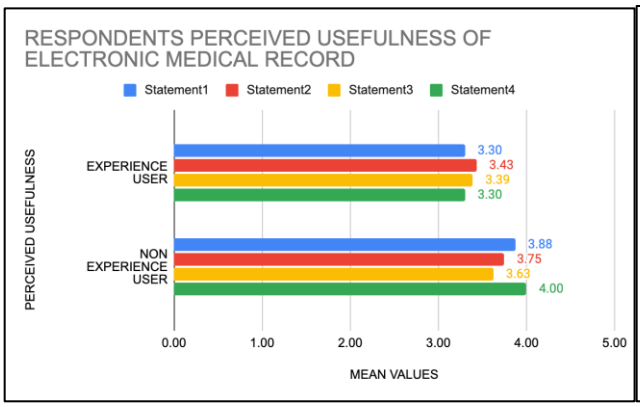

Figure 7. Mean Value of the response.

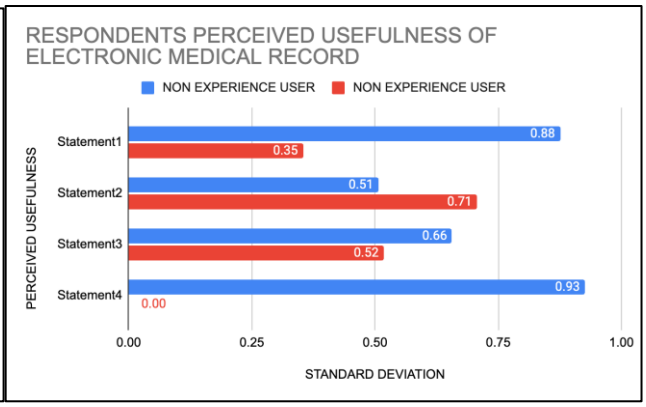

Figure 8. Central Tendency of the response.

Figure 7 and 8 illustrates the respondents perceived usefulness of EMR (Electronic Medical Record). The bar chart shows that the majority of the respondents (Experience and non experience users) have a positive perception of the usefulness of EMR. Both figure 7 and 8 shows that a significant number of the respondents agree that EMR is useful to them in the following way.

- It will enable them to accomplish tasks more quickly.
- It will give them greater control over their work.
- It will improve their productivity.
- It will allow them to accomplish more work than would otherwise be possible.

While a significant number of the respondents strongly agree with statements 1, 2 and 4.

Table 6 is a report of the respondents perceived usefulness of EMR.

Table 6 Respondents Perceived Usefulness of EMR

	Statements	Mean	Standard Deviation
	Experience Users		
1	Electronic Medical Record will enable me to accomplish task more quickly.	3.30	0.88
2	Electronic Medical Record will give me a greater control over my work.	3.43	0.51
3	Electronic Medical Record will improve my productivity.	3.39	0.66
4	Electronic Medical Record will allow me to accomplish more work than would otherwise be possible.	3.40	0.93
	Non Experience Users		
1	Electronic Medical Record will enable me to accomplish task more quickly.	3.88	0.35
2	Electronic Medical Record will give me a greater control over my work.	3.75	0.71
3	Electronic Medical Record will improve my productivity.	3.63	0.52
4	Electronic Medical Record will allow me to accomplish more work than would otherwise be possible.	4.00	0.00

CONCLUSION

Electronic Medical Record (EMR) provide benefits that improve the overall outcomes of both patient and health care providers. This study attempts to identify the reason for the low adoption of EMR, despite the benefits it offers. A cross sectional survey was carried out to investigates the perception of health workers on the adoption of EMR (Electronic Medical Record). Results of the study revealed that the majority of the respondents have a positive perception of EMR. As such health worker perception may not be a hindrance to the adoption of EMR but could be a factor influencing the use of EMR.

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