



Research Article

A STUDY TO ASSESS THE KNOWLEDGE AND ATTITUDE REGARDING ELECTRONIC HEALTH RECORD AMONG NURSING STAFFS IN SELECTED HOSPITALS, GUWAHATI, ASSAM

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ABSTRACT

The electronic health record (EHR) is a longitudinal electronic record of the patient health care information generated by one or more encounters in any care delivery setting. The information are patient demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data and radiology reports. Nurses play an essential role in the acquisition, evaluation and application of the electronic health records. The EHRs allow both the nurses and physicians to have easy access to patient health data and information to make timely clinical decisions. Moreover, this information can be accessed when and where they are needed. Objectives of the study were to assess the knowledge regarding EHR among nursing staffs, to assess the attitude regarding EHR among nursing staffs, to assess the opinion regarding EHR among nursing staffs in selected hospitals, Guwahati, Assam, to find out correlation between knowledge and attitude regarding EHR among nursing staffs and to find out the association of knowledge and attitude with selected demographic variables regarding EHR among nursing staffs in selected hospitals, Guwahati, Assam. A descriptive research design was used in the study to accomplish the objectives. By using non-probability convenience sampling technique, the sample size was selected. The study was conducted among 110 nursing staffs of selected hospitals, Guwahati, Assam. Respondents were selected on the basis of the inclusion criteria. Semi-structured knowledge questionnaire and likert scale were used to assess the knowledge and attitude. Out of 110 respondents Majority 72 (65.45%) of the respondents were in the age group of ≤ 25 years, 102 (92.72%) respondents were female, 69 (62.72%) respondents were GNM, 58 (52.73%) respondents were attended special training on IT, 52 (47.27%) respondents were attended any special training on EHR. Majority of the respondents 71 (65.55%) had moderately adequate knowledge, 22 (20%) respondents had inadequate knowledge, and 17 (15.45%) respondents had adequate knowledge. Majority of respondents 83 (75.45%) of the respondents had unfavourable attitude and 27 (24.55%) of the respondents had favorable attitude towards EHR. Majority 80% respondents lost recorded data and they didn't recovered lost data, 69.09% respondents had frustration due to more than one system for data entry, 85.45% respondents had access to a computer on unit whenever need. The mean and standard deviation of knowledge was 7.14 with 2.36 and for attitude was 30.15 with 5.60 respectively. The correlation between knowledge and attitude was found to be ($r=1$) highly correlated. The association was statistically tested by chi square at $\alpha=0.05$ level of significant and result showed that there were no significant association between knowledge and attitude with the selected demographic variables like age, gender, professional educational status, special training attended on IT and special training attended on EHR except knowledge with special training attended on IT.

Conclusion: In this study shows out of 110 nursing staffs the majority 71 (65.55%) respondents had moderately adequate knowledge and majority 83 (75.45%) of the respondents had unfavourable attitude about EHR. The study concluded that there is lack of knowledge as well as unfavourable attitude towards the electronic health record. Nurses need to get training program regarding Electronic Health Records.

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INTRODUCTION

The Electronic Health Record (EHR) is a longitudinal electronic record of the patient health care information generated by one or more encounters in any care delivery setting. The information are patient demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data and radiology reports.

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According to International Organization for Standardization (ISO), the EHR means a repository of patient data in digital form, stored and exchanged securely, and accessible by multiple authorized users. It contains retrospective, concurrent and prospective information and its primary purpose is to support continuing, efficient and quality integrated health care. The EHR automates and streamlines the clinician's workflow. The EHR has the ability to generate a complete record of a clinical patient encounter as well as supporting other care-related activity directly or indirectly via interference including evidence-based decision support, quality management, and outcomes reporting.

EHRs have been used in home care, self monitoring by the patients; at primary care level where the care is provided in the community by the staff as home health care, secondary care provided by the team of specialists for the indoor and outdoor patients and at tertiary care settings, the care is provided by team specialist in major referred hospital for the indoor and outdoor patients. Nurses play an essential role in the acquisition, evaluation and application of the electronic health records. The EHRs allow both the nurses and physicians to have easy access to patient health data and information to make timely clinical decisions. Moreover, this information can be accessed when and where they are needed. The use of computerised systems in health care has been growing globally. Electronic health records are computerised systems that allow storage, retrieval and sharing of information among professionals.

Objectives of the Study

1. To assess the knowledge regarding Electronic Health Record among nursing staffs in selected hospitals, Guwahati, Assam.
2. To assess the attitude regarding Electronic Health Record among nursing staffs in selected hospitals, Guwahati, Assam.
3. To assess the opinion regarding Electronic Health Record among nursing staffs in selected hospitals, Guwahati, Assam
4. To find out correlation between knowledge and attitude regarding Electronic Health Record among nursing staffs in selected hospitals, Guwahati, Assam.
5. To find out the association of knowledge and attitude with selected demographic variables regarding Electronic Health Record among nursing staffs in selected hospitals, Guwahati, Assam.

Review of Literature

Nathan M, *et al.* (2014), conducted a cross sectional study to assess the health providers’ computer knowledge, experience and attitudes prior to the implementation of the QUALMAT (Quality of Maternal and Paternal Care: Bridging the know-do gap) electronic CD at Burkina Faso, Ghana and Tanzania. In this study 63% were from Tanzania and 37% from Ghana. The mean age was 37.6 years and 79% were female. Only 40% had ever used computers, and 29% had prior computer training. About 80% were computer illiterate or beginners. Most 95.3% had positive attitudes towards computers. Females had significantly lower scores than males.

Raddaha HA, *et al.* (2018), conducted a cross sectional exploratory study to know the opinions, perceptions and attitudes toward an electronic health record system at Muscat, Oman. Out of 169 nurses, 74% of nurses had high positive attitudes towards EHR system. Nurses who reported that hospital sought for suggestions for customization of the system ($p= .03$), who found the system as an easy-to-use clinical information system ($p= .01$), who reported the presence of good relationship with the system’s managing personnel ($p= .03$), and who reported that the system provided all needed health information ($p= .02$), were more likely to develop high positive attitude toward the system.⁶

RESEARCH METHODOLOGY

Research approach: Quantitative research approach.

Research design: descriptive research design.

Research variables: knowledge and attitude.

Demographic variables: Age, gender, professional educational status, special training attended on IT and special training attended on EHR.

Setting of the study: Study was conducted in 2 selected hospitals, Guwahati, Assam.

Population of the study: The nursing staffs.

Target population: Nursing staffs in selected Hospitals of Guwahati, Assam.

Accessible population: All the nursing staffs whose working experience more than 3 months in selected hospitals, Guwahati, Assam.

Sample: Nursing staffs in selected hospitals whose working experience more than 3 months who fulfil the inclusion criteria.

Sample size: 110 nursing staffs.

Sampling technique: Non probability convenience sampling technique was used in this study.

Tools and technique:- Structured questionnaire to assess the knowledge and opinion and 4-point Likert scale to assess the attitude. The technique used for the study was self report.

Validity of the tool: The tool was validated by 8 experts: 3 computer experts, 5 nursing experts.

Reliability of the tool: The reliability of the tool was determined by using Karl Pearson correlation coefficient and ‘r’ was found 1 for knowledge and 1forattitude and it proved reliable.

Pilot Study Report: Pilot study was conducted on 10 samples
Main Study: 2nd – 28th July, 2019

RESULTS

Table I Frequency and percentage distribution of the nursing staffs according to their age

n=110		
Age groups (years)	No.	Percentage
≤25 Years	74	67.27%
26-45 Years	32	29.09%
36-45 Years	4	3.64%
>45 Years	0	0%
TOTAL	110	100%

The table I shows that, out of 110 nursing staffs, majority 74 (67.27%) of the respondents were in the age group of ≤25 years, 34 (30.91%) respondents were in age group of 26-35 years, four (3.64%) respondents were in the age group of 36-45 years. The results are shown in bar diagram in figure 1.

n=110

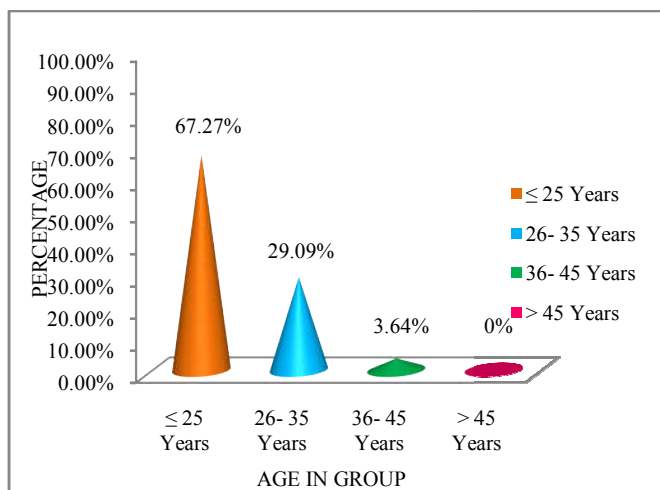


Figure 1 Percentage distribution according to their age groups

Table II Frequency and percentage distribution of the nursing staffs according to their gender

gender	no.	percentage
Male	8	7.28%
Female	102	92.72%
TOTAL	110	100%

n=110

The table II shows that, out of 110 nursing staffs majority 102 (92.72%) of the respondents were female, and the rest eight (7.28%) were male. The results are shown in bar diagram in figure 2.

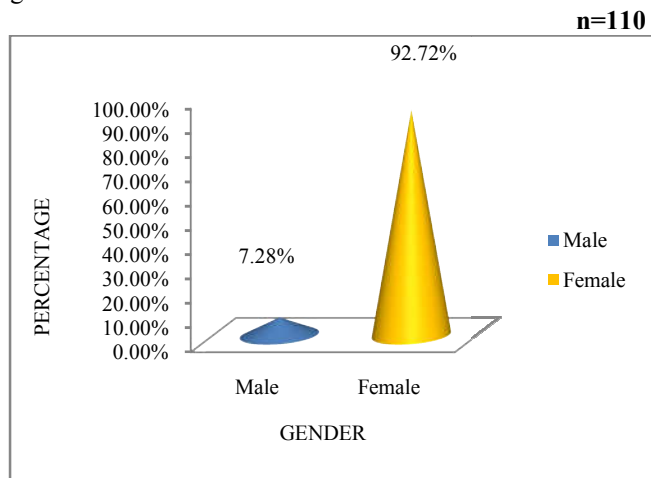


Figure 2 Percentage distribution of the nursing staffs according to their gender

Table III Frequency and percentage distribution of the nursing staffs according to their professional educational status

Professional educational status	No.	Percentage
GNM	69	62.72%
B. Sc. Nursing	32	29.09%
M. Sc. Nursing	3	2.73%
Post Basic B. Sc. Nursing	6	5.46%
TOTAL	110	100%

n=110

The table III shows that, out of 110 nursing staffs majority 69 (62.72%) of the respondents were GNM, 32 (29.09%) respondents were B. Sc. Nursing, three (2.73%) respondents were M. Sc. Nursing, six (5.46%) respondents were Post B. Sc. Nursing. The results are shown in bar diagram in figure 3.

n=110

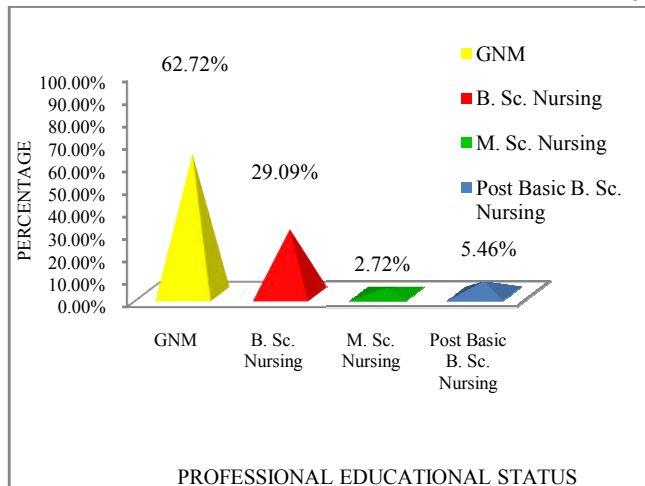


Figure 3 Percentage distribution of the nursing staffs according to their professional educational qualification

Table IV Frequency and percentage distribution of nursing staffs according to their special training attended on IT

Any Special Training Attended On It	No.	%
Yes	58	52.73%
No	52	47.27%
TOTAL	100	100%

n=110

The table IV shows that, out of 110 nursing staffs majority 58 (52.73%) of the respondents were attended special training on information technology, and the rest 52 (47.27%) were not attended any special training on information technology. The results were shown in bar diagram in figure 4.

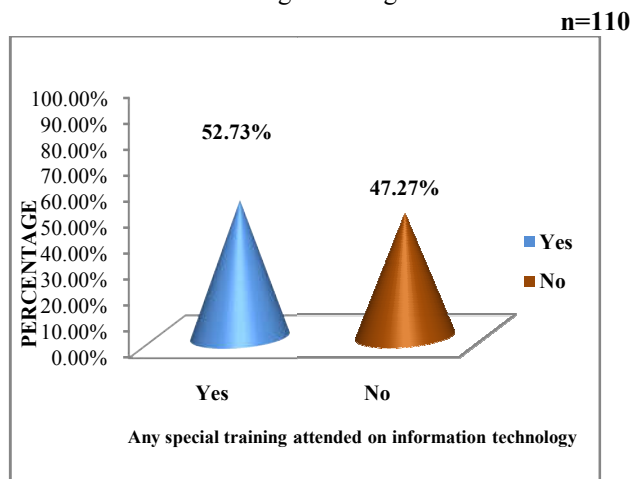


Figure 4 Percentage distribution of the respondents according to their special training attended on information technology

Table V Frequency and percentage distribution of the nursing staffs according to their special training attended EHR

Any Special Training Attended On Ehr	No.	%
Yes	52	47.27%
No	58	52.73%
TOTAL	110	100%

n=110

The table V shows that, out of 110 nursing staffs majority 52 (47.27%) of the respondents were attended special training on electronic health record, and the rest 58 (52.73%) respondents were not attended any special training on EHR. The results were shown in bar diagram in figure 5.

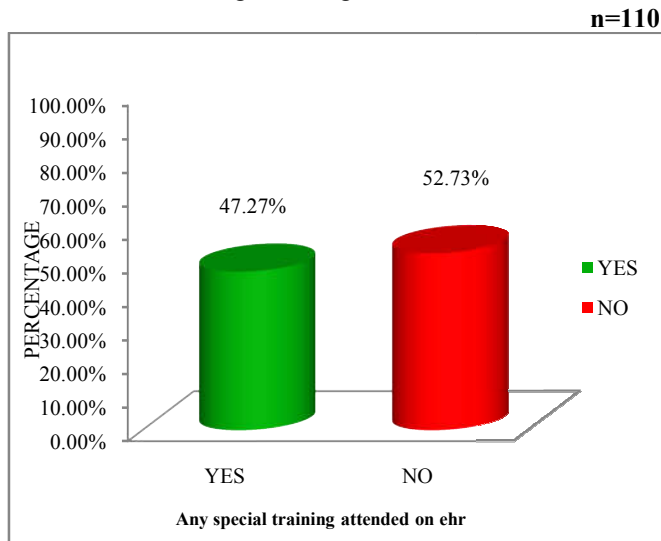


Figure 5 percentage distribution of the respondents according to their special training attended on HER

Table VI Frequency and percentage distribution of the nursing staffs according to their level of knowledge

knowledge	no.	%	mean	sd	range of scores	total score
Inadequate (<50%)	22	20%				
Moderately Adequate (50-75%)	71	64.55%	7.14	5.6	2-11	12
Adequate (>75%)	17	15.45%				

The table VI shows that out of 110 respondents, majority 71 (65.55%) had moderately adequate knowledge, 22 (20%) had inadequate knowledge, and 17 (15.45%) had adequate knowledge. The mean and standard deviation of knowledge level was 7.14 and 5.6 respectively. Minimum score and maximum score range was 2-11.

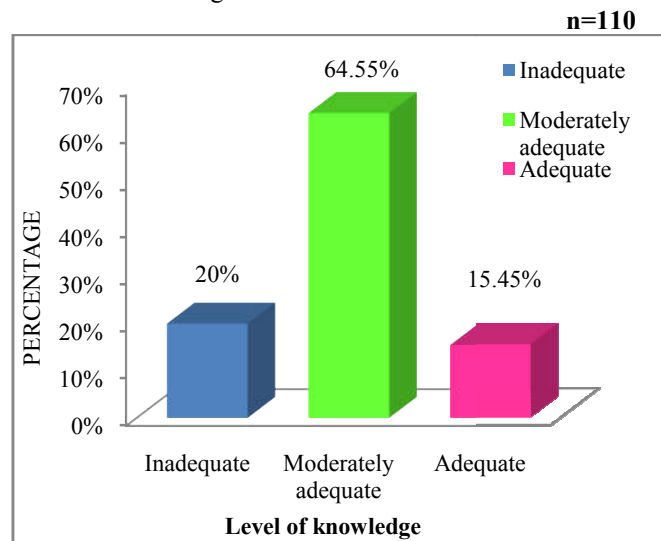


Figure 6 Percentage distribution of the nursing staffs according to their level of knowledge

Table VII Frequency and percentage distribution of the nursing staffs according to their level of attitude

attitude	no.	%	mean	sd	rang of score	total score
Unfavourable Attitude	83	75.45%	30.15	3.78	25 - 38	64
Favourable Attitude	27	24.55%				

The table VII reveals that out of 110 respondents, majority 83 (75.45%) of the respondents had unfavourable attitude about EHR, and 27 (24.55%) of the respondents had favourable attitude. The mean and SD level was 30.15 and 3.78 respectively. Minimum score and maximum score range was 25-38.

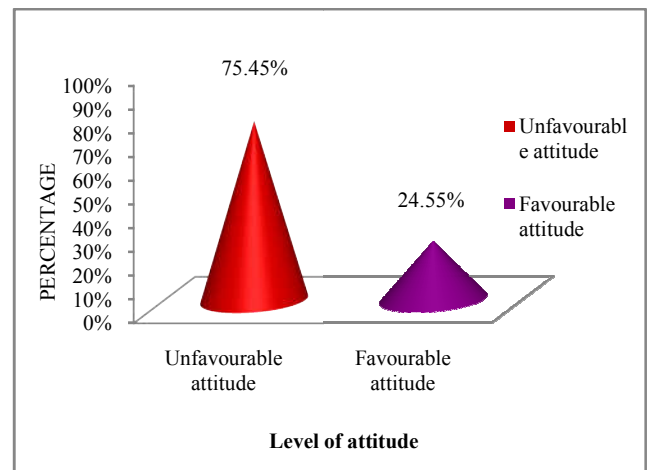


Figure 6 percentage distribution of the nursing staffs according to their level of attitude

Table VII The opinion of the nursing staffs regarding EHR

Opinion of the Nursing Staffs	n=110			
	YES		NO	
	No	%	No	%
Do you get help immediately when you experienced a problem with the computer system?	99	90%	11	10%
Does having more than one system for data entry procedure lead to frustration?	76	69.09%	34	30.91%
Do you consider yourself to be an experienced computer user?	73	66.36%	37	33.64%
Does your hospital provide adequate training for clinical information system?	67	60.91%	43	39.09%
Do you feel confident while entering the data into EHR?	84	76.36%	26	23.64%
Do you chart on paper before entering on computer?	86	78.18%	24	21.82%
Do you have access to a computer on your unit whenever you need?	94	85.45%	16	14.55%
Are the record safe, if your office hit by disaster?	81	73.64%	29	26.36%
Do you have any problem while entering the data in your computer?	26	23.64%	84	76.36%
Have you ever lost any recorded data?	88	80%	22	20%
Did you recover your lost data from the computer?	22	20%	88	80%

Findings: Majority 90% respondents got help immediately after experienced any problem with the computer system, 69.09% respondents had frustration due to more than one system for data entry, 66.36% respondents considered themselves to be an experienced computer user, 60.91% respondents got training which was provided by

hospital regarding clinical information system, 76.36% respondents felt confident while entering the data into EHR, 78.18% respondents chart on paper before entering on computer, 85.45% respondents had access to a computer on unit whenever need, 73.64% respondents gave positive opinion about record safe during disaster, 76.36% respondents didn't have any problem while entering the data in computer, 80% respondents lost recorded data and they didn't recover lost data i.e. 80% respondents.

Table VIII Correlation between knowledge and attitude score of the nursing staffs

n=110			
Variables	Mean	Sd	Correlation co-efficient
Knowledge	7.14	2.36	1
Attitude	30.15	5.60	

The presented in the table shows the correlation between knowledge and attitude of nursing staffs regarding Electronic Health Records. The correlation was statically calculated by using Karl's Pearson correlation co-efficient formula. The calculated r' value was found to be 1. It indicated that there was highly positive correlation between knowledge and attitude regarding Electronic Health Education. Thus with increase in knowledge there is increase in attitude.

Table IX Association between knowledge with selected demographic variables

n=110									
Variables	IA	MA	A	F	Cal value	Tab value	df	α value	Remarks
Age group									
≤25 years	15	47	12	74	0.41	5.991	2	0.05	NS
26-45 years	5	24	7	36					
	17	71	22	110					
Gender									
Male	3	5	0	8	4.39	5.991	2	0.05	NS
Female	14	66	22	102					
	17	71	22	110					
Professional Educational Qualification									
GNM	12	43	14	69	7.48	11.71	5	0.05	NS
B.Sc.Nsg	3	24	5	32					
M.Sc.Nsg	0	3	0	3					
Post B.Sc.N. Nsg	2	1	3	6					
	17	71	22	110					
Training on IT									
Yes	13	33	12	58	4.22	3.84	1	0.05	S
No	4	38	10	52					
	17	71	22	110					
Training on EHR									
Yes	8	31	13	58	1.57	5.99	2	0.05	NS
No	9	40	9	52					
	17	71	22	110					

NOTE: For calculation purpose, chi square formula was applied.

IA- Inadequate, MA- Moderately Adequate, A- Adequate, F- Frequency, NS- Non significant, S – Significant, df- Degree of freedom. The association was statistically tested using chi square at $\alpha = 0.05$ level of significance and the results shows that there was no significant association between knowledge of nursing staffs regarding EHR except special training attended on IT.

Table X Association Between Attitude With Selected Demographic Variables

n=110								
Variables	UF	F	F	Cal Value	Tab value	df	α value	Remarks
Age group								
≤25 years	56	18	74	0.1	3.84	1	0.05	NS
26-45 years	27	9	36					
	83	27	110					
Gender								
Male	6	2	8	0.32	3.84	1	0.05	NS
Female	77	25	102					
	83	27	110					
Professional Educational Qualification								
GNM	47	22	69	5.59	7.81	3	0.05	NS
B. Sc. Nursing	28	4	32					
M. Sc. Nursing	3	0	3					
Post B.Sc. Nursing	5	1	6					
	83	27	110					
Training on IT								
Yes	43	15	58	0.1	3.84	1	0.05	NS
No	40	12	52					
	83	27	110					
Training on EHR								
Yes	40	12	52	0.1	3.84	1	0.05	NS
No	43	15	58					
	83	27	110					

NOTE: For calculation purpose, clubbing of the scores was done and chi square formula was applied.

UF- Unfavourable, F- Favourable, F- Frequency, NS- Non significant, df- Degree of freedom. The association was statistically tested using chi square at $\alpha = 0.05$ level of significance and the results shows that there was no significant association between attitude of nursing staffs regarding EHR.

CONCLUSION

The present study was designed to assess the knowledge and attitude of nursing staffs regarding electronic health record. Out of 110 nursing staffs the majority of 71 (65.55%) respondents had moderately adequate knowledge, 22 (20%) respondents had inadequate knowledge, and 17 (15.45%) respondents had adequate knowledge, 83 (75.45%) of the respondents had unfavourable attitude and 27 (24.55%) of the respondents had favourable attitude towards EHR. Majority, 80% respondents lost recorded data and they didn't recover lost data, 69.09% respondents had frustration due to more than one system for data entry, 85.45% respondents had access to a computer on unit whenever need. The study identified a positive correlation between knowledge and attitude. Study showed, no association with the selected demographic variables with knowledge and attitude such as age, gender, professional occupational status, special training attended on EHR except knowledge with special training attended on IT. This study the investigator concluded that the nursing staffs should get the training on IT and EHR during orientation period as well as monthly basis.

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