

Training Program on Decision Making for Fourth Year Students at the Faculty of Nursing, Zagazig University

Maha Abdeen Abdeen⁽¹⁾, Sahar Hamdy El-Sayed⁽²⁾ & Fatma Gouda Metwally⁽³⁾

⁽¹⁾Lecturer of Nursing Administration, Faculty of Nursing, Zagazig University.

⁽²⁾Assistant Professor of Nursing Administration, Faculty of Nursing, Zagazig University,

⁽³⁾Lecturer of Nursing Administration, Faculty of Nursing, Zagazig University.

Abstract:

Background: Nurses use knowledge, skills and critical thinking to make the effective decisions that enable them to provide care in a variety of traditional and expanding nursing roles. The rapid changes in health care environment have expanded the decision-making role of the nurse. Therefore, one of the emphasized goals of nursing education is to increase and improve learners' thinking and decision-making skills. **Aim of the study:** The study aims to identify the effect of a decision making training program on knowledge and skills of fourth year nursing students. **Setting:** The study was conducted at the Faculty of Nursing, Zagazig University. **Subjects:** A total of 338 nursing students, enrolled in the fourth year at the time of the study, during the academic year 2011-2012 were recruited for the study. Of these, 125 students (18 males & 107 females) agreed to participate. **Three tools** were used for data collection. They included; 1) The knowledge questionnaire sheet, 2) Five situations about decision-making, and 3) Students' decision-making evaluation sheet. **Results:** Before implementation of the program, all students (100%) had inadequate knowledge and the highest percentage of them (84.8%) had unsatisfactory practices regarding decision-making. After the implementation of the program, most of students (92.8%) had adequate knowledge and more than half of them (55.2%) had satisfactory practices immediately after implementation the program. However, these percentages dropped to 65.6% and 51.2% respectively in the follow-up test. There are statistically significant correlations between students' knowledge and practices scores in the post and follow-up tests. **Conclusion and recommendation:** The findings led to the conclusion that such training is effective in improving students' knowledge and practices about decision making. In the light of the findings, it is recommended to incorporate such training in Nursing Faculty curricula, with more use of appropriate educational and clinical strategies to foster critical thinking and decision-making skills.

Key words: Decision making, Tools of decision-making, Group decision-making, Training program.

Introduction:

Nurses use knowledge, skills and critical thinking to make the effective decisions that enable them to provide care in a variety of traditional and expanding nursing roles.⁽¹⁾ The rapid changes in health care environment have expanded the decision-making role of the nurse.⁽²⁾ Student nurses are expected to make decisions based on their education and experience as well as the information at hand.⁽³⁾

Therefore, one of the emphasized goals in nursing education is to increase and improve learners' thinking and decision-making skills.⁽⁴⁾

Decision-making is defined as a systematic cognitive process of identifying alternatives, evaluating those alternatives, and come to a conclusion; the decision may lead to a specific action but also may lead to refraining from action.⁽⁵⁾ There are

three types of decision. The routine decisions are made when problems are well defined and common and when established rules, policies, and procedures can be used to solve them. The adaptive decisions are made when both problems and alternative solutions are somewhat unusual and only partially understood. The innovative decisions are made when the problems are unusual and unclear and creative solutions are necessary.⁽⁶⁾

There are several organizational models for decision making including: 1) The rational model, which uses deliberate actions to select the best solutions to achieve the desired outcome; 2) The political model, where the goal is to win; 3) The collegial model, that facilitates decisions by a group of peers; 4) The bureaucratic model, which uses routines as determined by policies and procedures that lead to predictable outcomes and only slight adaptations to operations; and (5) the garbage can model, which is based on pure chance. Decisions are unplanned and coincidental based on multiple diffuse values.⁽⁷⁾

The decision making process involves the sequential steps of identifying the needs for decision, determining the goal or outcome of the decision, identifying alternatives or actions along with the benefits and consequences of each action, deciding which action to implement and evaluating the decision.⁽⁸⁾ The approaches/tools of decision making that help visualize options to facilitate evaluation of the options which include the decision tree, forced-field analysis, decision grid, paired comparison analysis, program evaluation and review technique, payoff tables, consequence tables, logic models, Gantt chart and Pareto analysis. Their use varies according to the nature of the problem, the decision maker, the

context or situation and the decision-making process or method.⁽³⁾

On the other hand, the decision making process may be negatively influenced by certain factors such as gender, past experience, values, personal biases, preconceived ideas, jumping into conclusions, failing to obtain all necessary information, choosing decisions that are too broad, too complicated, or lack definition, and failing to evaluate the decision appropriately. Incorporating critical thinking into the decision making process may help preventing these factors from distorting the process.⁽⁵⁾

Group decision making is a key component to the functioning of an organization, whenever a decision could influence employees, it is helpful to involve them in making that decision.⁽⁹⁾ The effectiveness of groups depends greatly on the group members, the size and personality of group members are important considerations when choosing participants, more ideas can be generated with groups, thus allowing for more choices this increases the likelihood of higher quality outcomes. Another advantage of group is that when followers participate in the decision making process acceptance of the decision is work likely to occur. Additionally, group may be used as a medium for communication, while this approach is time consumed, without effective leadership, groups can waste time, be nonproductive, can be led to conflict and groups can be dominated by one person or become the battleground for a power struggle among assertive members.⁽²⁾ The techniques of group decisions making include consensus, brainstorming, the task force, quality circles, nominal group technique, and Delphi method are different methods to facilitate group decision-making.⁽³⁾

The ability of nurses to cope with problems, identify options from which to choose solutions in client care situation, reach successful decisions is based on accurate evidence and valid reasoning, their skills in determining patient needs and providing systematic care are all dependent upon their critical thinking and decision making skills.⁽¹⁰⁾

Training is a planned program designed to improve performance of nurse, student, groups and/or organizational level. Improved performance in turn, implies that there have been measurable changes in knowledge, skills, and attitudes.⁽¹¹⁾ Therefore, the nurse students require current knowledge and skills to make appropriate decisions; this is achieved through use of non-traditional teaching strategies in nursing education and active participation in continuous training programs.⁽³⁾

Significance of the study:

In a contemporary health care environment characterized by rapidly changing development, and to keep up with this development, the nursing students must possess the decision-making skill because after graduation they will face many problems and/or situations in clinical areas, this requires from them to look for creative alternatives and make well thought-out decision, without good knowledge and skills about decision making they may not make effective decisions in their profession, this makes significant impact on the delivery of health care. Therefore, to meet the demands of a new health care system, the researchers realized the need for developing and implementing training program for fourth year nursing students about decision-making, and hypothesized that this would upgrade their knowledge and skills in relation to decision-making.

Aim of the study:

The study aims to identify the effect of a decision making training program on knowledge and skills of fourth year nursing students. This was achieved through assessing the knowledge and skills of fourth year nursing students regarding decision-making; designing and implementing a training program in decision making; and evaluating their knowledge and skills after implementing the program.

Research hypotheses:

- After implementation of the training program, students' knowledge and skills will be improved.
- There will be a correlation between knowledge and skills of nursing students.

Subjects and Methods:

Study design:

A quasi-experimental design was used.

Setting:

The study was conducted at the Faculty of Nursing, Zagazig University. The Faculty of Nursing was founded in 1984 as a center of academic excellence and innovation to prepare highly qualified graduates capable of competing at the national and regional levels. The Faculty of Nursing consists of seven academic departments: Nursing Administration, Community Health Nursing, Pediatric Nursing, Medical Surgical Nursing, Psychiatric and Mental Health Nursing, Obstetric and Gynecological Nursing, and Geriatric nursing. Over 1200 undergraduate students are currently enrolled in the four years of the nursing program.

Sample:

All fourth year nursing students were (338) enrolled at the time of the

study during the academic year 2011-2012 at the study setting. Of these, 125 students (18 males and 107 females) agreed to participate, 177 refused, and 36 students were absent at the time of collecting data.

Tools of data collection:

Three tools were used for data collection; they included 1) The knowledge questionnaire sheet, 2) Five situations about decision-making, and 3) Students' decision-making evaluation sheet.

1. ***The knowledge questionnaire sheet:*** It was developed by the researchers based on literature review of Ellis and Hartley ⁽³⁾; Sullivan and Decker ⁽⁶⁾; and Tomey ⁽⁷⁾, to assess nursing student's knowledge of decision-making. It consists of two parts: part 1: It deals with student's personal characteristics as; age, and gender. Part 2: It consists of 40 multiple choice and true/ false questions covering knowledge about decision making as definition, types, process, tools and techniques of decision making, as well as the barriers to effective decision making.

Scoring system:

For knowledge items, a correct response was scored 1 and the incorrect zero. For each area of knowledge, the scores of the items were summed-up and the total divided by the number of the items, giving a mean score for the part. These scores were converted into a percent score. Knowledge was considered adequate if the percent score was 60% or more and inadequate if less than 60%. ⁽¹²⁾

2. ***Five situations about decision-making:*** It was developed by the researchers based on related literature of Ellis and Hartley ⁽³⁾;

Sullivan and Decker ⁽⁶⁾; and Tomey ⁽⁷⁾. It consisted of five situations testing the practice of decision-making. The situations addressed actual or potential problems that the students may be faced with during their training in the clinical setting at the hospital. They included evaluation of student's skills of applying the steps of decision-making; and using different tools for making decision (decision tree, decision-making grid, Gantt chart, and consequence tables).

3. ***Student's Decision Making Evaluation Sheet:*** It was developed by the researchers based on related literature of Ellis and Hartley ⁽³⁾; Sullivan and Decker ⁽⁶⁾; and Tomey ⁽⁷⁾, to evaluate student's practices for decision making that based on the situations given to the students. It included two parts. The first part includes the steps of the decision making process which are: identify the need for a decision, determine the desired goal or outcome, identify alternatives or actions along with the benefits and consequences of each action, decide which action to implement and finally evaluate the decision. As well, the second part includes the decision making tools, it consists of four types namely; *decision tree* (4 steps) *decision-making grid* (5 steps); *Gantt chart* (4 steps) and *consequence tables* (4 steps.).

Scoring system:

- For the first part: Each correct step was scored three, for a total score of 15.
- For the second part: Each correct step was scored one, except in the item related to drawing table

/graphic scored half score and it had a total score 15.

- For scoring total practice, the scores of the items of the first and second parts were summed-up and converted into a percent score. The practice was considered satisfactory if the percent score was 60% or more and unsatisfactory if less than 60%.⁽¹²⁾

Content Validity:

Before data collection, the prepared tool was face and content validated by a panel of five faculty members at the Zagazig and Ain Shams Universities, Faculty of Nursing. They evaluated the tool using a structured form asking about readability, clarity, congruence with the definitions of the constructs (i.e., decision making) and acceptability. Their comments, generally around selection of vocabulary and sentence construction, were used to revise the forms and necessary modifications were done.

Field work:

The study was implemented through assessment and planning, intervention, and evaluation phases.

- **Assessment and planning phase:** The researchers met with the students, and explained to them the purpose and process of the study. Those who gave their oral consent to participate were handed the self-administered questionnaire to fill it in as a pre-test. They were given full instructions regarding the questions and situations to be answered. The time needed to complete the whole tool was about 75-90 minutes. Then the researchers evaluated the decision-making knowledge and skills of each student applying the aforementioned scoring systems. In

view of the analysis of these results of students' assessment and in the light of pertinent literature, the researchers developed the intervention-training program entitled "Decision making skills."

- **Implementation phase:** One month before the program, the researchers disseminated information about it to the fourth year nursing students at the Faculty of Nursing, Zagazig University. A time schedule suitable for students was developed to conduct the program that included the date, place, time, and duration of each session.
- The program was presented in English language, officially used at the Faculty of Nursing. It consists of eight sessions (3 theory & 5 practical) lasting for 21 hours (6 hours of theory & 15 hours for practice). The sessions were provided in the morning time every weekday for eight days. The students were divided into six groups of about 21 students each. A booklet of the training program was given to each participating student.
- The theoretical part covered the definition of decision making, the types of decisions, characteristics of successful decision makers, factors affecting decision making, steps of decision making process, types of decision making styles, how to improve decision making, different decision making tools, group decision making, obstacles to effective decision making, strategies to strengthen the nurses' role in decision making for patient care, and the relationship between problem solving and decision making. The practical part consisted of situations about decision making in small groups to

develop the habits of thinking about making decision.

Practice activities were:

- I. Making decision through implementation of the steps of decision making process according to one situation given to all students, which include five steps; identify the need for a decision, determine the desired goal or outcome, identify alternatives or actions along with the benefits and consequences of each action, decide which action to implement and finally evaluate the decision.
- II. Use the decision making tools which includes; decision tree, decision making grid, Gantt chart, and consequence tables to reach the decision to solve the problems presented in the other four situations.

The teaching methods used were lectures, group discussions, and assigned situations. The teaching aids and media included PowerPoint shows, paper and pencil work, and handouts including reference lists of the sources cited in the program.

- **Evaluation phase:** After the last session, the participants were asked to answer the same tool for a post-test assessment. In order to assess longer-term retention, a follow-up test was done after three months using the same tool. The data collection took a period of six months, from beginning of December, 2011 to end of May, 2012.

Pilot study:

A pilot study was carried out on twelve fourth year nursing students. Based on their feedback, no further modifications were done. As these twelve students attended the training

program subsequently, they were included in the main study sample.

Administrative and ethical considerations:

An official permission was obtained from the Dean of the Faculty of Nursing, at Zagazig University to collect the necessary data and oral consent was obtained from each nursing student for acceptance to participate in the study.

Statistical design:

Data entry and statistical analysis were done using the statistical package for social sciences (SPSS) version 16.0. Qualitative categorical variables were compared using chi-square test. Whenever the expected values in one or more of the cells in a 2x2 tables was less than 5, Fisher exact test was used instead. Statistical significance was considered at p-value <0.05.

Results:

Table (1): shows generally a low level of knowledge of decision making among nursing students before the program. This is especially evident regarding the tools of decision-making (0.0 %) and techniques of group decision-making (12.0%). In total, none of them reached adequate level of knowledge. However, after implementation of the program, 92.8% of them had adequate total knowledge. This percentage dropped to 65.6% in the follow-up test. All the improvements at the post and follow-up tests were statistically significantly higher than the pretest. The most prominent decreases at the follow-up test were related to the areas of definition and barriers (53.6% & 32.0% respectively).

As regards decision-making practices, **table (2)** reveals generally a low level of satisfactory practices of

decision making among nursing students before the program. This is especially evident regarding Gantt chart and consequence tables (0.0% each). In total, before implementation of the program, 15.2% of students had satisfactory total practices. Meanwhile, 55.2% had satisfactory practices at the post-test, although it dropped to 51.2% at the follow-up. Nonetheless, the percentages of satisfactory practices remained higher compared with pre-test, with highly statistically significant differences.

In the comparison of the effect of the program on male and female students, **table (3)** shows no statistically significant differences at the pre-test. Meanwhile, female students' knowledge about decision making was higher than males in the post and follow-up tests (95.3% vs 77.8% & 69.2% vs 44.4% respectively) with statistically significant differences, ($p = 0.02$ & 0.04 respectively).

For the second research hypothesis, the researchers examined the correlation between the students' knowledge and practices. Specifically, they examined whether the increase in knowledge score was related to the increase in the overall practice score. The Pearson's (r test) did reach a significant positive correlation in the immediate post and follow-up tests ($r=.309$ & $.742$; at $p = .000$ & $.000$ respectively), (**table 4**).

Discussion:

In nursing, the rapidly changing health care delivery and practice require sound critical thinking and decision-making skills. Developing decision-making skills is a growing area of nurse educational activity and one that attracts a variety of educational approaches⁽¹³⁾. This study was carried out to identify the effect of

a decision making training program in improving fourth year nursing students' knowledge and skills. The findings show significant improvements in both immediate posttest and at follow up test scores.

The findings of the present study showed that all nursing students had inadequate knowledge regarding decision making before implementation of the training program. This may be attributed to the deficient curriculum in this area, which does not adopt decision making skills as a goal for educational reform and true autonomy for nursing students throughout the years of academic study. The deficiency in their knowledge was variable, with relatively better levels related to the types and process of decisions making, while it was very low for the tools and techniques of decision making. The less deficient levels may be due to the effect of the nursing administration course, which includes a lecture on decision making that covers its types and process.

After the implementation of the program, there were significant improvements in students' knowledge, which continued with slight decline at the follow-up test. Such improvement could be attributed to multiple causes, which include the comprehensive content of the training program, the written handout provided to students serving as an ongoing reference, the application of adult learning rules throughout the sessions of the program with encouragement of questions, participation, and interactions along the program implementation with the use of multimedia. Added to this, is the nursing students' interest and eagerness to know and change.

The decline of students' knowledge witnessed at the follow-up test of the present study reveals that nursing

students' knowledge about decision making still needs to be boosted. This finding is expected given that the subject is new for them and has not been addressed before along their study years. Additionally, the fourth year students are so pre-occupied with their formal studies in preparation for the exams of the final year, so that they may have put aside this extra-curricular training for the sake of concentrating on their curricular activities. Hence, it is imperative that the nurse educators incorporate teaching methods that enhance decision making skills in nursing students' curricula. In this respect, Garrett⁽¹⁴⁾ emphasized that the teaching of decision-making skills has become an essential part of nursing education. It can be taught and learned through appropriate teaching and clinical experiences. The findings go in line with a number of previous studies.⁽¹⁵⁻¹⁷⁾

Concerning decision making skills or practice, the findings of the present study showed that the highest percentage of nursing students had unsatisfactory total practices before the implementation of the training program. The finding is quite plausible given the even worse knowledge in the pre-test. This may be attributed to that the nursing administration course focused on the theoretical part of decision making not on how to apply. The deficiency in their practices was variable, with relatively better levels related to the process and tools of decision making namely decision tree and decision making grid, while it was very low for the tools of decision making related to Gantt chart and consequence tables. The less deficient levels may be due to the effect of nursing administration course, which includes a lecture on decision making that covers its process and this two tools of decision making (decision tree

and decision making grid). In the practical part through giving situations to students and training them on how to use tools and steps of decision making process to make a decision.

In this respect, Tomey⁽⁷⁾ stated that decision tree is a method that can help individual visualize the available alternatives, outcomes, risks, and information needs for a specific problem over a period of time. It helps him/her to see the possible directions that actions may take from each decision point and to evaluate the consequences of a series of decisions. In this respect, Marquis and Huston⁽¹⁸⁾ mentioned that the decision grid allows one to visually examine the alternatives and compare each against the same criteria.

However, improvement after implementation of the program in the post-test indicated the success of the program. The positive effect of the program may be attributed to the continuous encouraging feedback from the researchers, which enhanced students' feelings of confidence in decision-making. The researchers also were supporting students' autonomy, which allowed them to think critically to improve their decision-making skills. Another important factor is the use of appropriate teaching strategies to stimulate thinking. These findings agree with several previous studies.^(19, 20)

However, the declines at the follow-up test may be explained by the lack of application of the acquired knowledge and skills during their formal training. This indicates the importance of continued practical application after the end of the training program. In congruence with this, Croskerry⁽²¹⁾ highlighted that the decision-making is not a skill that is easily explained in a classroom. Hence, it needs ongoing practice to gain more

experience in making decisions. ⁽²²⁾

The current study findings point to a gender effect on students' decision-making knowledge. Results revealed that female students' percentages of adequate knowledge were higher compared with those of the males. However, this appeared only after implementation of the program, which indicates that female students got more benefit from the training program in the theoretical part. The finding may be attributed to that female students in the Egyptian society may spend more time in studying and may be more eager to learn, especially in a historically feminine specialty as nursing. In addition, in this study sample the number of female students constitutes six times the number of the males. However, the relation between gender and decision-making is debatable with some studies reporting significant differences ⁽²³⁻²⁵⁾, and others denying it. ⁽²⁶⁻²⁸⁾

The findings of the present study showed that there were positive correlations between students' knowledge and practices about decision making at the post and follow-up tests. Thus, the investment of time and effort by participants in attending 21 hours of classes resulted in improvements in both knowledge and practices. Perhaps because participants originally had such inadequate knowledge and unsatisfactory practice scores, this link is stronger than other reports. The finding was expected, given that sound practices are based on good knowledge. ⁽²⁹⁾ This is in agreement with Khamis ⁽³⁰⁾ who found a positive correlation between knowledge and practices of nurse students. Similarly, the previous results are congruent with the study of Hussein ⁽³¹⁾, which showed a strong positive correlation between participants' knowledge and their practices in post and follow up periods.

On the contrary, Mohamed ⁽²⁵⁾ found that there was no statistically significant correlation between levels of knowledge and practices.

Conclusion and Recommendations:

This study aimed to identify the effect of a decision making training program in improving knowledge and practices for fourth year nursing students. The findings lead to the conclusion that such training was effective in improving students' knowledge and skills about decision making. In the light of the findings, it is recommended to incorporate such training in the Nursing Faculty curricula, with more use of appropriate educational and clinical strategies to foster critical thinking and decision-making skills such as problem based learning, case studies, role-playing and computer assisted instructions. The long-term effects of such training in actual patient care needs to be studied.

Table (1): Students' knowledge about decision making throughout the study intervention (n=125)

Items of knowledge	Time						X ² Test (p-value) Pre-post	X ² Test (p-value) Pre-Follow-up
	Pre		Post		Follow-up			
	No.	%	No.	%	No.	%		
▪ Definition of decision making	17	13.6	95	76.0	67	53.6	98.41 <0.001*	44.82 <0.001*
▪ Types of decision	46	36.8	120	96.0	92	73.6	98.18 <0.001*	34.23 <0.001*
▪ Process of decision making	39	31.2	115	92.0	99	79.2	97.67 <0.001*	58.23 <0.001*
▪ Barriers to effective decision making	26	20.8	117	93.6	40	32.0	135.30 <0.001*	4.03 0.04*
▪ Tools of decision making	0	0.0	104	83.2	94	75.2	178.08 <0.001*	150.64 <0.001*
▪ Techniques of group decision making	15	12.0	97	77.6	80	64.0	108.76 <0.001*	71.73 <0.001*
Total knowledge:								
▪ Adequate	0	0.0	116	92.8	82	65.6	216.42	122.02
▪ Inadequate	125	100.0	9	7.2	43	34.4	<0.001*	<0.001*

(*) Statistically significant at $p < 0.05$

Table (2): Students practices about decision making throughout the study intervention (n=125)

Practice	Pre		Post		Follow- up		X ²⁽¹⁾	p-value	X ²⁽²⁾	p- value						
	Unsatisfactory	Satisfactory	Unsatisfactory	Satisfactory	Unsatisfactory	Satisfactory										
	No.	%	No.	%	No.	%										
Decision making tools	107	85.6	18	14.4	43	34.4	82	65.6	55	44.0	70	56.0	66.150	<0.001**	45.62	<0.001**
▪ Decision tree																
▪ Decision making grid	111	88.8	14	11.2	53	42.4	72	57.6	60	48.0	65	52.0	57.59	<0.001**	46.26	<0.001**
▪ Gantt chart	125	100.0	0	0.0	56	44.8	69	55.2	64	51.2	61	48.8	92.56	<0.001**	78.08	<0.001**
▪ Consequence tables	125	100.0	0	0.0	59	47.2	66	52.8	63	50.4	62	49.6	86.97	<0.001**	79.80	<0.001**
▪ Total of decision making tools	111	88.8	14	11.2	57	45.6	68	54.4	64	51.2	61	48.8	50.97	<0.001**	40.30	<0.001**
▪ Process of decision making	103	82.4	22	17.6	54	43.2	71	56.8	56	44.8	69	55.2	39.44	<0.001**	36.56	<0.001**
Total practice	106	84.8	19	15.2	56	44.8	69	55.2	61	48.8	64	51.2	43.84	<0.001**	36.52	<0.001**

X2 (1): difference between pre and post test
 (*) Statistically significant at p<0.05

X2 (2): difference between pre and follow up

Table (3): Relations between students' knowledge, practices about decision-making, and their gender throughout the study intervention

Program Time	Gender				X ² Test	p-value
	Male (n=18)		Female (n=107)			
	No.	%	No.	%		
Pre:						
▪ Knowledge	0	0.0	0	0.0	0.00	1.00
▪ Practice	0	0.0	1	0.9	Fisher	1.00
Post:						
▪ Knowledge	14	77.8	102	95.3	Fisher	0.02*
▪ Practice	8	44.4	65	60.7	1.69	0.19
Follow-up:						
▪ Knowledge	8	44.4	74	69.2	4.17	0.04*
▪ Practice	3	16.7	8	7.5	Fisher	0.20

Table (4): Correlation between students' knowledge and practices about decision making after the study intervention

Variables	Total practice score	r test	p- value
Total knowledge score	Post	0.309(**)	0.000
	Follow-up	0.742 (**)	0.000

** Correlation is significant at the 0.01 level (2-tailed).

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