Nursing Faculty Opinions about
Problem Based Learning (PBL) Method

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ABSTRACT

Background and Objectives: As a learning strategy, Problem Based Learning (PBL) offers the potential to bridge the theory – practice gap in professional practice, through the recognition and evaluation of practice – based problems. It is based on principles and cognitive psychology, it differs from the much criticized traditional methods of learning which are largely teacher centered. The study was carried out to determine the opinions of faculty teaching members in nursing schools about PBL method

Methods and Materials: The descriptive study conducted throughout the period of 1st January till 28th March / 2013. Convenience sample of (68) faculty members were attained; almost of them were baccalaureate –as a trainers- and master in nursing, 82.4% of them were nursing faculty members and more than half of them (58.8%) had less than (6) years as a tenure in nursing schools. The sample was approximately equal distributed among the settings of the study (two nursing colleges and two nursing institutes). Anonymous questionnaire was structured depended on many previous related literatures, it consists of (46) items (Tutor-related=5, Student-related=12 and Design-related=29). Each item has five options (Strongly disagree=1 – Strongly agree=5). Validity of the instrument was checked by review of (5) experts in nursing, while reliability was measured through split-half technique (r=0.87).

Results: The main results of the study were: low acceptable level of opinion about PBL method among faculty members, while the attributes of the sample didn't indicate any significant statistical differences.

Conclusion: It concluded that nursing curriculums tend to be traditional method as lecture-based.

Key words: Problem based Learning, Faculty Members, Nursing Schools, Opinion.

INTRODUCTION

There are various modes of information transfer like lectures, small group discussions, bed-side teaching, one minute preceptor, assignments, tutorials and problem based learning (PBL) available for teaching. Each modality has its own pros and cons. The evolutionary changes have proved the worth of PBL as a rich source of learning. PBL was first implanted by McMaster University medical school in 1960 (Azhar, 2012). It is defined as "An educational method characterized by the use of patient problems as a context for students to learn problem solving skills and acquire knowledge about the basic and clinical sciences" (Galukande et. al., 2008). PBL is perhaps the most innovative pedagogical method ever implemented in education. Its effectiveness in facilitating student problem-solving and self-directed learning skills has been widely reported in medical education. It has also become increasingly popular across disciplines in higher education (Dochy et. al., 2003; Hmelo-Silver, 2004). The adoption of PBL in higher education outside the medical field gradually occurred throughout the 1990s. It has been applied globally in a variety of professional schools of nursing (Barnard et. al., 2005). At the same time, it was incorporated into disciplines within the social sciences (Hartsell and Parker, 2008). There are still students, nurses and even lectures who work upon the clinical part of nursing education merely as practical training in nursing procedures and routines without any connection with theoretical nursing. Accordingly, the theoretical and practical parts of nursing education are still often separated instead of being intertwined as a whole, where practical experiences can be illuminated and critically analyzed by means of theoretical knowledge and then further redefined and extended within practice. This so-called 'theory-practice gap' is reinforced by the fact that nurses to a very low extent read and apply findings from nursing research of their clinical practice (Ehrenberg and Haggblom, 2007). From another side, healthcare today is delivered within a rapidly changing environment where the nature of the client care is often complex. This necessitates the need for nurses who are competent and capable of critical

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thinking and problem solving. The emphasis within nursing curricula is, therefore, on the development of higher order intellectual skills and abilities where the nurse acquires the ability to understand, not just acquire knowledge (Marcia, 2008; Ali et. al., 2010), alongside the development of lifelong learning skills. PBL is seen as one approach which meets these needs. The development of a new program presented the ideal opportunity to develop a hybrid curriculum where PBL modules could be incorporated alongside more traditional forms of teaching and learning throughout each year of the program (Rowan et. al., 2008). So, this study endeavored to determine opinions of faculty teaching members in nursing education settings about PBL.

MATERIALS AND METHOD

Across-sectional design was used in the present study. Four settings were the sample collected from; (Nursing College/Mosul University, Nursing College/ Hawler Medical University, Technical Institute/Nursing Department/ Mosul, and Higher Health Institute/Health Ministry / Mosul) from 1st January – 28th March / 2013. Convenience sample of (68) faculty teaching members in the settings of the study, the sample distributed as a highest percentages as; 47.1% were Master degree, 45.6% were baccalaureate degree, and the rest were Doctorate degree; 47.1% were Trainers, 26.5% were Assistant Lecturers, 23.5%

were Lecturers and the rest were Associate Professors; 78.3% were Nursing Professionals, 15.7% were Basic Sciences Teachers and the rest were physicians; 58.8% had a Tenure of less than (6) years followed by 19.1% of (6-10) years, 11.8% of (11-15) years and the rest had over that till (30) years of tenure; 33.8% were from Nursing College / Mosul University, 23.5% were from Nursing College / Hawler Medical University, 23.5% were from Technical Institute / Nursing Department / Mosul and the rest were from Higher Health Institute / Health Ministry / Mosul. Anonymous questionnaire related to the topic of the study, divided upon three aspects (Tutor-related= 5, Student-related=12, and Design-related=29), was structured depending on many related literatures, each item has five options (Strongly-disagree= 1 – strongly agree=5). Mean of score (≥ 3) was considered an acceptable level of opinion among the sample. Validity of the instrument was checked by the review of (5) experts in nursing, while Reliability was measured through split-half technique (r= 0.87).Significance level accepted was (< 0.05). Self-administered method was used to collect data. Descriptive statistic (Frequency, Mean, Standard Deviation, Mean of Score, Standard Error, Confidence Interval), and Inferential statistic (Analysis of Variance) were used to demonstrate and analyze the data.

RESULTS

Table (1): Descriptive Statistics of BPL Aspects.

PBL Aspect	Normal range	Mean	Std. Dev.	Std. Error	Confidence Interval (C.I.)
Tutor-related	5-25	13.63	3.21	0.39	12.85-14.41
Student-related	12-60	30.25	6.46	0.78	28.69-31.81
Design-related	29-145	102.28	11.17	1.35	99.58-104.98
Total Items	46-230	146.16	12.29	1.49	143.19-149.14

Table (2): Test of Normality.

Aspects of PBL	Kolmogorov-Smirnov		
	Statistic	**df**	**Sig.**
Tutor-related	0.077	68	0.200[*]
Student-related	0.078	68	0.200[*]
Design-related	0.083	68	0.200[*]
Total Items	0.071	68	0.200[*]

[*] This is a lower bound of the true significance.

Table (3): Mean of scores and standard deviations of all items.

No	Item	Mean	Std. Dev.	Level of Acceptance
	Tutor-related			
1	The tutor plays a facilitator role of group learning process.	**1.85**	**1.46**	**Low**
2	The tutor provides a guidance in eliciting critical learning objectives.	4.25	0.98	Accepted
3	The tutor must be familiar with teaching techniques.	**2.27**	**1.54**	**Low**
4	The tutor's tutoring skills are much more important in learning than the tutor's experience in the content of the problem learned.	3.5	1.57	**Accepted**
5	Differences in personal qualities could be an interfering factor in the evaluation of cognitive skills of PBL students.	**1.75**	**1.12**	**Low**
	Student-related			
1	Students integrate their previous knowledge and explore the various aspects of the problem scenario using formal and informal resources.	**2.41**	**1.54**	**Low**
2	Students have a positive role in BPL method.	**2.45**	**1.59**	**Low**
3	Students divide in small groups.	**2.08**	**1.32**	**Low**
4	Students engage in self-evaluation and peer evaluation.	**1.97**	**1.48**	**Low**
5	Student spends more time out of class studying.	**2.61**	**1.67**	**Low**
6	Student uses non-traditional textbook sources to gain information.	**2.22**	**1.53**	**Low**
7	Students determine their own learning objectives.	**2.07**	**1.42**	**Low**
8	Students tend to reason backwards from clinical information to theory.	3.97	1.44	**Accepted**
9	Students are able to provide extensive causal reasoning.	**1.97**	**1.32**	**Low**
10	PBL students performs less in clinical assessment compared to conventional curriculum students.	**2.76**	**1.68**	**Low**
11	Each student can teach other members in the group.	**2.2**	**1.34**	**Low**
12	PBL graduates are less likely to accept isolation when compared to graduates from a conventional curriculum.	3.5	1.46	**Accepted**
	Design-related			
1	PBL increases the ability to transfer theoretical knowledge to practical skills.	**2.6**	**1.06**	**Low**
2	PBL makes the students capable of making use of their knowledge and skills in real circumferences.	3.73	1.00	**Accepted**
3	BPL creates sufficient self confidence in the students.	3.72	0.94	**Accepted**
4	PBL improves the student's attitude toward educational course.	3.54	1.07	**Accepted**
5	PBL prevents students from quitting their studies.	3.05	1.09	**Accepted**
6	PBL needs cooperation among student group.	3.1	1.12	**Accepted**
7	PBL provides good opportunity to solve problems within a realistic situation.	4.00	0.88	**Accepted**
8	PBL helps students develop advanced skills in self-directed learning, problem solving, decision making and critical thinking.	4.02	1.05	**Accepted**
9	PBL allows students to attain their highest potential in nursing.	**2.97**	**1.25**	**Low**
10	PBL allows students to make sense of the material in their own way, integrating newly acquired knowledge with prior knowledge and experiences.	4.04	0.87	**Accepted**
11	PBL requires brainstorming from the students.	4.13	0.94	**Accepted**
12	PBL is time-consuming and stressful.	**2.77**	**1.15**	**Low**
13	PBL leads to an overload of work on the students.	**2.64**	**1.03**	**Low**
14	PBL leads to the construction of new knowledge.	4.41	3.69	**Accepted**
15	PBL required students to conduct search for information.	**2.89**	**1.13**	**Low**
16	PBL considers expensive (e.g. staff time, resources and more faculties).	**2.51**	**1.13**	**Low**

17	PBL motivates learning.	4.13	0.82	**Accepted**
18	PBL can be measured by structured short-answer questions.	**2.07**	**1.04**	**Low**
19	PBL needs more prepared materials for classroom instruction.	3.7	1.05	**Accepted**
20	Teachers' and students' performances in PBL method can't examined by critical thinking process skills.	4.1	0.83	**Accepted**
21	PBL needs attracted increasing attention from the students.	4.1	0.73	**Accepted**
22	PBL is student-centered.	3.97	0.79	**Accepted**
23	PBL must have clearly and defined task among the group of students.	4.07	0.75	**Accepted**
24	Achieving objectives in PBL depend on skills of the tutor rather than performance or collaboration of the members of the group.	3.33	1.15	**Accepted**
25	PBL enhances depth and width of learning.	4.25	0.67	**Accepted**
26	PBL gives the learner greater long-term benefits than traditional learning.	3.5	1.02	**Accepted**
27	PBL gains the student basic sciences knowledge.	3.64	0.95	**Accepted**
28	PBL gains students robust and retrievable knowledge.	4.05	0.82	**Accepted**
29	PBL develops interpersonal skills, teamwork and personal growth for students.	3.13	1.15	**Accepted**

Table (4): Association among PBL aspects with Educational Qualifications of the Sample by using Analysis of Variance (ANOVA):

Aspect of PBL		Mean of Square	Sum of Squares	df	F. value	Sig.
Tutor-related	Between Groups	0.456	0.913	2	0.043	Non-Sig.
	Within Groups	10.629	690.896	65		
	Total		691.809	67		
Student-related	Between Groups	1.791	3.581	2	0.042	Non-Sig.
	Within Groups	43.003	2795.169	65		
	Total		2768.75	67		
Design-related	Between Groups	279.136	558.272	2	2.325	Non-Sig.
	Within Groups	120.053	7803.419	65		
	Total		8361.691	67		
All items	Between Groups	343.551	687.101	2	2.367	Non-Sig
	Within Groups	145.14	9434.119	65		
	Total		10121.221	67		

Table (5): Association among PBL aspects with Scientific Title of the Sample by using Analysis of Variance (ANOVA):

Aspect of PBL		Mean of Square	Sum of Squares	df	F. value	Sig.
Tutor-related	Between Groups	7.958	23.875	3	0.519	Non-Sig.
	Within Groups	10.436	667.934	64		
	Total		691.809	67		
Student-related	Between Groups	39.078	117.233	3	0.43	Non-Sig.
	Within Groups	41.899	2681.517	64		
	Total		2798.75	67		
Design-related	Between Groups	135.439	406.316	3	0.36	Non-Sig.
	Within Groups	124.303	7955.375	64		
	Total		8361.691	67		
All items	Between Groups	171.615	514.846	3	0.338	Non-Sig.
	Within Groups	150.100	9606.375	64		
	Total		10121.221	67		

Table (6): Association among PBL aspects with Profession of the Sample by using Analysis of Variance (ANOVA)

Aspect of PBL		Mean of Square	Sum of Squares	df	F. value	Sig.
Tutor-related	Between Groups Within Groups Total	0.078 3.103	0.156 204.83 204.986	2 66 68	0.025	Non-Sig.
Student-related	Between Groups Within Groups Total	16.818 15.063	33.635 994.191 1027.826	2 66 68	1.116	Non-Sig.
Design-related	Between Groups Within Groups Total	53.66 64.51	107.32 4257.666 4364.986	2 66 68	0.832	Non-Sig.
All items	Between Groups Within Groups Total	125.067 121.451	250.134 8015.779 4265.913	2 66 68	1.03	Non-Sig.

Table (7): Association among PBL aspects with Tenure of the Sample by using Analysis of Variance (ANOVA):

Aspect of PBL		Mean of Square	Sum of Squares	df	F. value	Sig.
Tutor-related	Between Groups Within Groups Total	4.987 10.756	24.934 666.875 691.809	5 62 67	0.464	Non-Sig.
Student-related	Between Groups Within Groups Total	41.299 41.811	206.494 2592.256 2798.75	5 62 67	0.988	Non-Sig.
Design-related	Between Groups Within Groups Total	260.548 113.854	1302.739 7058.952 8361.691	5 62 67	2.288	Non-Sig.
All items	Between Groups Within Groups Total	154.655 150.773	773.273 9347.948 10121.221	5 62 67	1.026	Non-Sig.

Table (8): Association among PBL aspects with Nursing School (Place of Work) of the Sample by using Analysis of Variance (ANOVA):

Aspect of PBL		Mean of Square	Sum of Squares	df	F. value	Sig.
Tutor-related	Between Groups Within Groups Total	16.576 10.033	49.728 642.081 691.809	3 64 67	1.652	Non-Sig.
Student-related	Between Groups Within Groups Total	79.174 40.019	237.522 2561.228 2798.75	3 64 67	1.978	Non-Sig.
Design-related	Between Groups Within Groups Total	145.908 123.812	437.724 7923.967 8361.691	3 64 67	1.178	Non-Sig.
All items	Between Groups Within Groups Total	55.949 155.521	167.846 9953.375 10121.221	3 64 67	0.36	Non-Sig.

DISCUSSION

The nursing education system has to aim at producing nurse professional who are competent in the delivery of patient care, so nursing curriculums must be adopted to develop links between theory and clinical practice consequently prepare students to develop self directed learning skills, self reliance, the ability to utilize different intellectual

interpersonal and practical skills to make decisions and solve problems critically (Azer, 2001). Research has shown that traditional pedagogies for nursing are inadequate for teaching clinical thinking and problem-solving skills, while nursing students must have the ability to think critically, but fail to do so because the emphasis in nursing programs is on teaching greater amounts of content rather than on the application of knowledge (Del Bueno, 2005). Similar to that is the real situation of nursing education in our country, which is depending on conventional teaching methods and traditional lectures.

Most tutors perceived PBL as more reflective than the traditional method and are superior in terms of retention and reinforcement of information because according to the tutors, students in PBL sessions discussed issues with understanding rather than regurgitation memorized facts. Also educators are generally positive about PBL as compared to the traditional method because they perceived it as being of value to them and to the students by improving their interaction with the students, motivating students to learn, enhancing student-directed learning, problem solving skills, and creating a free and relax atmosphere in which to facilitate learning, so as, Fifty-five (95%) of (59) nurse educators participated in previous study viewed PBL positively (Khumalo and Gwele, 2000). Clancy, in her study, claimed that overall participants viewed PBL positively also they described it as enjoyable, interactive, engaging, and relevant (Clancy, 2005). In the present study, tutors agreed upon (20) out of (46) items positively (43.48%) as an acceptable level of opinion "for they had means of scores ≥3". From their perspectives, they emphasized that the student can't identify the problem and discovered information by his/herself.

Determination of tutors' opinions about PBL in the present study was categorized according to three aspects; Tutor-related items, Student-related items and Design of PBL method related items. Subsequently, the researcher will referred to the items that got mean of score (± Standard Deviation) less than the accepted level (<3) solely, explaining the item, demonstrating its score and standard deviation, then criticizing the result through an explanation in respect to the notion explicit or implicit in it. Initially, it is important to indicate if the sample was representative to the target population or not, and if it was normally distributed! Coming back to (Table-1),and revision the means, standard errors, and confidence intervals, representativeness of the sample is verified, for the standard errors – in comparison with means – were very low, and confidence intervals were narrow. In addition to that, the sample was normally distributed as the result of Kolmogorov-Simarnov test demonstrated which was non-significant (Table-2).

Tutor's related aspect (Table-3): Our sample emphasized on the tutor's role in PBL as content expert more than facilitator (Item;1), they viewed the tutor as 'spoon-fed' of information to pupils**,** this view is contradicted with (Rakhudu et. al., 2012). Familiarity with teaching techniques is somewhat less than what it must be (Item;3), from tutors' point of view, the tutor must be bounded or limited in pursuing such teaching method. Personal qualities from tutors' point of view in the present study didn't consider as an effective factor in evaluating critical thinking and cognitive skills among learner, therefore, tutors perhaps evaluated their students depending on their temperament or haphazardly (Item;5). Unfortunately, clinical evaluation represents a complex mix of information based upon a multitude of personal and secondary observations of residents. It is difficult to sort out the influence of personal qualities and clinical skills from that of problem-solving qualities (Musal et. al., 2003).

Student-related aspect (Table-3): Almost students'-related items have attain unacceptable level of scores. Naturally, depending on previous knowledge, anyone tries to explore any problem encountered later. This phenomenon didn't perceived perfect in perspective of the study sample, for they (Item;1).Clancy (2005) illustrated that PBL places emphasis on self-directed learning and this in turn requires a full range of resources to be made available for effective and efficient learning to occur. Positivity or active role of the student in PBL was remarked less than it deserves as the sample of this study perceived. Geoffrey and Henk (2007) referred that 94.1% (127) of their study subjects agreed or strongly agreed that as far as the students' participation in the tutorial process was concerned they were active, keen and enthusiastic. The keenness and thirst for knowledge is possibly what happens for every group of students who join PBL, but it is also true that it does provide a more challenging, and enjoyable approach to education. Clancy (2005) pointed out that majority of participants (n=7) out of (8) remarked on the importance of group dynamics and how this played a huge role in their experience of PBL. Ideally it should allow a number of students in a group which would help in success-full implementation of those features in a session (Arzuman, 2005). Our sample indicated that division of students to small groups is an embarrassment factor for the teaching process (Item;3). Students in small groups attempt to

define and bound the problem and set learning goals by identifying what they know already, what hypotheses or conjectures they can think of, what they need to learn to better understand the dimensions of the problem, and what learning activities are required and who will perform them. Self-evaluation and peer evaluation was misunderstood among the present study sample(Item;4) while students individually and collaboratively in PBL must assume responsibility for generating learning issues and processes through self-assessment and peer assessment and access their own learning materials (Ward and Lee, 2002). The introduction of PBL has highlighted the need to beef up learning resources especially because 40% of the students' time is dedicated to going out of research for answers to the questions raised in the tutorials (Galuk et. al., 2008), whereas, time was underestimated from point of view of our sample (Item;5), in addition to that the sample considered that traditional resources as textbooks are sufficient (Item;6). As long as, BPL is deemed to be self directed learning, therefore, it necessitates a full range of resources be available for effective and efficient learning to occur. Learning objectives – as tutors perceived were the obligation of the teacher solely (Item;7), whereas, in case of objectives were identified by the students, they must act, search, analyze, synthesize, applicate and practice in such away and enthusiastic to carry out them, while they view the learners in a negative role in this learning method "learners are receptors of information". Musal and colleagues (2003) agreed that the gaining of clinical reasoning skills is one of the main outcomes of BPL. PBL students are able to provide extensive causal reasoning but made fewer diagnostic errors. Our sample agreed with that to some extent (Item;9). Students in PBL may tend to derive from clinical information theory and producing an extensive overlap of data as an endeavor to applicate and practice what they knew, that should let them to search, find, identify, determine and verify the causal reasoning of the problem. Our sample agreed what so-ever with that (Item;10). As long as, the core of PBL method is student self learning, in addition to confrontation of a problem in a real situation, so the student will be able to provide any care and perform any procedure needed better than who dealt with the problem theoretically. PBL is a form of peer teaching whereby students work cooperatively in small groups to seek solution to problems, and to allow students to attain their highest potential in nursing while developing a deep understanding of nursing knowledge. Eventually, students naturally and as a benefit of their interrelationships and communications - that were established and developed through the small group dynamics - will interact, discuss, learn from and teach others in the group, while this point was misunderstood completely by the study sample (Item;11).

Design-related aspect (Table-3): PBL is a potentially powerful approach for students to gain practical problem-solving experience and self-directed learning (Gabr and Muhamed, 2011), therefore, it empower the recipients to conduct search, integrate theory and practice, and apply knowledge and skills to develop a practicable solution to a defined problem (Arzuman, 2005). The ability to transfer theoretical knowledge to practical skills among PBL students was less perceived among our tutors (Item;1). The central concept of PBL is that students will learn to solve realistic problems, and to develop problem-solving skills that are necessary for lifelong learning. It increases the ability to transfer the theoretical knowledge to practical skills. It also makes the students capable of making use of their knowledge and skills in real circumstances; and create sufficient self confidence in the students for making favorable use of their knowledge and skills in real work environment. This is directed in a implicit or explicit manner to attain high potential in nursing, this situation was somewhat perceived among our tutors (Item;9). PBL is time-consuming because it takes long for both the teacher and the student to review literature and search on problem identified (Khumalo and Gwele, 2000), and it is resource-intensive and requires much liaison which is time-consuming (Musal et. al., 2003). This notion is contradicted to obvious extent with opinion of the study sample (Item;12).Demand of extensive information and knowledge in PBL method creates heavy burden or overload the student faced that imposed on him/her to conduct search for information, this was not sufficiently perceived among our tutors (Items;13;15). PBL curriculum seems to acquire more resources and time on part of the tutor (Galukande et. al., 2008). Vahidi and colleagues (2007) indicated that almost of respondents in their study though the high initial cost of implementation and maintenance of PBL was an important issue that needs more time, resources and facilities, whereas our tutors contradicted that somewhat (Item;16). PBL required students to spend more time conducting research searching for information, therefore, it requires more faculty than are required when lectures are used in nursing education. The tutors need to spend many working hours facilitating the learning process (Yuan et. al., 2009). PBL students may not perform well on multiple-choice tests as students taught by lecture-based instruction, for,

multiple-choice questions, the preferred mode of standardized testing are not readily adapted to measuring the process skills needed for critical thinking. Structured short-answer questions have the ability to measure problem-solving abilities as well as knowledge recall, but are more time consuming to develop and score (Ward and Lee, 2002). Our tutors didn't perceive that in a good manner (Item;18). In contradiction to that, two previous studies suggest that the level of performance of PBL students in the United States and the final year multiple-choice questions were well as those of conventional curriculum students (Musal et. al., 2003).Through a hasty look, review of the analytical statistic tables "ANOVA" for (Education qualification, Table 4; Scientific title, Table 5; Profession, Table 6; Tenure, Table 7 and Nursing School working in, Table 8), it was found that there aren't any significant statistical differences between/among the categories of each variables, this reflects the similarities, or in a simple word, of their opinions toward PBL method.

CONCLUSIONS

The study concluded that nursing curriculums tend to be lectured-based learning, overall less accepted level of opinion toward BPL was common among nursing schools faculties and trainers, opinions about Student-relates aspect of PBL was worse level of opinions among nursing schools faculties and trainers and all attributes of the faculties had not any significant differences in regard to PBL.

RECOMMENDATION

The study recommended that education in respect to PBL must be undertaken, for, it is useful in clinical learning, fostering and enhancement of PBL method among nursing schools faculties and trainers through specialized educational working groups must be carried out in order to be familiar with this learning method, PBL must be depended in nursing learning in our nursing schools at any level to intertwine between theoretical knowledge and clinical skills and training groups of nursing faculties and trainers on PBL method to be mentors or tutors for others must be followed and in the same time must be increased.

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