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Shaping the Future of Medicine: The Effect of 'Selective' Choices on Tomorrow's Doctors

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***Abstract*:** This pilot case study examined the motivation behind selective choices taken by medical students in a Malaysian university. The study also considered the beneficial outcomes of Selective choices and educational activities that proved most useful. Qualitative approaches were used through triangulation methods such as semi-structured questionnaires, observation and document analysis. The study revealed that student choices were influenced by the opportunity to acquire new knowledge and skills (35.5 per cent), the prospects of having fun and excitement (24.4 per cent) and a general interest in the topic chosen (20 per cent). The educational activities found to be most useful were external visits (47.8 per cent) and practically based topics (34.4 per cent). A significant proportion (48.9 per cent) indicated that the Selectives taken have created awareness, provided new knowledge and valuable exposure to different educational experiences. The students reported that the courses have enhanced their personal development (13.3 per cent) and have given them new insights. The results of this study provided valuable insights into future improvements to the Selective courses, thus creative ways in designing the teaching and the delivery of the courses were implemented. In conclusion, the Selectives provided valuable exposure to students, widened their knowledge and skills both inside and outside traditional areas of medicine.

***Keywords*:** educational activities, medical students, selective choices, selective influence

***JEL classifications*:** *H75, I18, I21*

1. Introduction

Monash University Sunway Campus Malaysia is the first campus outside of Australia to be accredited by the Australian Medical Council for the Bachelor of Medicine/Bachelor of Surgery (MBBS) program. The MBBS program has an integrated curriculum which includes short courses known as 'Selectives' which is a variation of the traditional elective experience. The courses are designed to provide Year One medical students with opportunities to acquire skills and develop knowledge both inside and outside the traditional areas of medical education. The Selective courses are offered for ten weeks in semester two, for an average period of three hours per week. Selectives are designed by Selective Coordinators who prepare the course content, objectives and teaching plans. Selective Coordinators are members of the academic staff at Jeffrey Cheah School of Medicine and Health Sciences, Monash University. However, there are limitations in providing variety in these courses in terms of resources, skills and knowledge. Not all the tutors are equipped with diverse knowledge and skills that are outside the traditional areas of medicine.

In reality, in addition to medically-related problems medical professionals also encounter a spectrum of non-medical related problems. These include dealing with underprivileged patients, problems faced when working as a team, lack of self-esteem, problems in communication, inefficient time-management, managing staff and dealing with social problems in the workplace and the community. Therefore, there is a need to mould medical students to think outside the traditional medical curriculum. Hence, opportunities should be given to students to acquire certain skills and knowledge such as teamwork, empathy, communication skills and personal development.

However, these skills and knowledge are not directly taught in the medical curriculum. To make teaching more effective these skills and knowledge should be imparted in a stimulating and enjoyable environment. The tasks at hand were to make the teaching and learning stimulating enough for students to learn. Is this achievable? Are the Subject Coordinators given the liberty to design the Selective course or should they comply with a central decision? In order to teach outside the traditional medical curriculum, various innovative teaching methodologies were required. These included lectures by invited guest speakers, tutorials, field trips, hands-on practical sessions, mini workshops, ward rounds and audio-visual presentations. There were questions whether these educational activities were suitable and useful. There were also concerns whether these courses would be feasible in terms of the finance, safety and security issues which included travelling to various sites, liaising with external institutions, hiring external experts and booking and arrangement of facilities.

Another debatable issue was whether the courses provided were relevant to their medical careers. Having enrolled in the medical course, each student

still has their own interests and plans for their career pathway. This makes one wonder to what extent these selective courses will assist students to pursue their career in the future. Since a Selective is a short course, students are given the freedom to choose. Therefore, the Selective courses offered needed to be well-structured in order to benefit the students immensely. With the implementation of the Selective courses the School hopes to develop future doctors who practice holistic medicine and preserve the altruistic motivations for becoming a doctor in the first place. Since the selective program utilizes a novel teaching approach in the medical curriculum, the pilot case study aimed to explore the following research questions:

a) What were the rationales for students' Selective choices?
b) What educational activities proved to be most useful?
c) What influenced the medical students' choices in the Selective course?
d) What were the strengths of the Selective choices made?
e) What were the weaknesses of the Selective choices made?

2. Literature Review

Most medical students face huge challenges during the transition from being a medical student to an intern. Here they are required to acquire vast medical information and apply it immediately to their patients (Fisher *et al*., 2007). However, numerous studies have shown that graduating medical students are lacking in areas such as the management of terminally ill patients, communication, teaching and explaining end of life issues and teamwork (Frankel *et al*., 2004; Sullivan *et al*., 2003; Flynn *et al*., 1993; Bing-You and Sproul, 1992). Therefore, a variety of skills and knowledge is required to improve the quality of medical care given by practitioners. However, these skills are not always provided in the medical curriculum and Shapiro *et al.* (2006) have noted there are inadequate opportunities for discussing attitudes and skills in handling difficult situations in the medical curriculum.

The study by Bergman *et al.* (2008) describes how some of these skills also include such abilities as co-operating with other colleagues in healthcare settings and acquiring the knowledge to integrate results with the latest technology. Some researchers call this knowledge the second domain, or profound knowledge. This domain includes: knowledge of the organization as a system, knowledge of variation, knowledge of psychology and the theory of knowledge itself (Batalden and Stoltz, 1993). It is important to integrate these skills with the students' experience allowing them the opportunity to develop into highly skilled and reflective practitioners. Besides that, the Oxford CAL study has shown that students' enjoyment during the learning process may be associated with deep learning which in turn is associated with better performance in work and exams, higher self-esteem, greater course satisfaction, and better clinical

experience (Svirko and Mellanby, 2008). The integration with different teaching methodologies is viewed as part of postmodernist approaches to adult learning which challenge the mind (Dierkes *et al*., 2003) and where it is contended that there is not one particular type of learner nor one particular type of environment or learning method in which learning takes place (Kilgore, 2001).

Studies have indicated that the decision and pattern of a student's choice in medical career take effect mostly during the student's elective experiences and clinical training (Sobral, 2006). In addition there are other organizational features and faculty role models that also help students learn about their interest (Bergman *et al.,* 2008). One study shows that students usually choose electives that add to their skills and knowledge and is essentially transferable to their future education and career choice (Mihalynuk *et al.,* 2006). Furthermore, the study also shows that students who were given free choice in clerkship electives viewed this as a positive, highly regarded learning experience and also a key feature in the educational process of decision-making (Mihalynuk *et al.,* 2006).

In Asia for example, the curriculum and the teaching methodology is based on the western model and as a result Asian medical schools are questioning if there exists a disparity between what is taught and the actual skills needed by doctors in health care delivery (Lam and Lam, 2009).

Providing a broad range of ancillary subjects depends on the interests and initiative of the medical schools and their universities. This will contribute to the training of doctors in understanding other disciplines (Macnaughton, 1997). The document on *Tomorrow's Doctors,* produced by the General Medical Council (GMC) in December 1993 emphasizes the relevance of innovation and originality (Macnaughton, 1997). In this study, the writer emphasizes the importance of medical students understanding other disciplines and gaining transferable skills in the medical education process, such as computing skills and learning about working in a team in the context of a business entity (Macnaughton, 1997).

In similar research on electives, findings also show that a number of medical schools are providing "cross-cultural experience" to the medical students as an elective and according to Mutchnick *et al.* (2003), there are much published data that relate to positive experiences both personally and professionally surrounding cross-cultural exchanges. In the Mutchnick *et al.* (2003) study, it was reported that students had an increased awareness of the importance of skills in communication especially when communicating with non-English speaking individuals. This in turn caused the students to reflect upon their actions and not to take things for granted (Mutchnick *et al*., 2003). The study by Datta (2009) on students' knowledge of psychiatric disorders shows that movies can be used as an educational tool for students in better

understanding the social, cultural and historical cases of patients. This can be used in understanding the psychiatry of patients better.

The findings regarding electives for medical and dental students in Croatia by Koceic *et al.* (2010) show that the majority of students indicated they would welcome more practice in a laboratory or clinic, the opportunity to attend scientific conferences, integration with patients, international student exchange programs and field work activities. This is supported by numerous findings observed in the increase of the number of student enrolments with courses offering practical skills (Edson Vieira *et al*., 2004).

Therefore the researchers believe it is beneficial for students and tutors to venture into Selective courses which are outside the traditional medical curriculum, so as to shape future doctors. Selective courses offered in medical schools should be assessed regularly in terms of their quality in order to meet the future needs of the society.

3. Methodology

This pilot case study was designed to evaluate the Selective choices offered in terms of the unique educational experience encountered by the medical students. The choices of Selective courses offered varied from field work and classroom oriented topics to laboratory-based teaching. The Selective courses ranged across the following themes – palliative care, indigenous people, complementary and alternative medicine, surgical anatomy, marine conservation and coral reef monitoring, laboratory-based research, zoonotic diseases, exploration of ethical and social issues relating to movies, and mind, body and soul enrichment. Before pursuing the Selective course, students were given the opportunity to rank the Selective courses in order of their preference, after which they were allocated to one of their top three choices.

Questionnaires and explanatory forms were distributed to Year One medical students who had successfully completed the Selective course. Students were briefed on the purpose of this research before the forms were distributed. The research was viewed through a different lens, that of the qualitative approach using questionnaires, past documentation analysis and observation. It was necessary to use sufficient triangulation to improve the validity of the data as there were twelve different Selective choices and each of them was distinctive in nature and had between 6-15 students. Therefore, the questionnaire designed had to fit the requirements of each of the Selective choices that were offered.

The questionnaire was designed by using semi-structured questions consisting of closed and open-ended questions. Closed-ended responses in the form of multiple choice questions were used to determine the students' background. Some questions included the most important reasons for choosing a particular Selective topic, the educational activity found most helpful to

one's learning experience and the various ways on how the Selective course had influenced the students. The remaining questions were designed using the open-ended format based on Pendleton's evaluation tool of 'what worked well' and 'what did not work well' during the Selective course. The students were also invited to make suggestions on improvements to the learning experience of the Selective course in order to better shape the future of medicine and tomorrow's doctors. Since the participants were anonymous, return of completed questionnaires was considered as implied consent. Of the 95 questionnaires sent out, 90 responded giving a 94.7 per cent response rate.

4. Data Analysis

From the start of the medical school in 2007, all evaluation of student experiences utilized open-ended questions in the form of a questionnaire designed using Pendleton's tool of 'what went well' and 'what didn't go so well'. The questionnaires were completed by both students and tutors. The initial data from the evaluation in 2007 provided insights as to what the students and tutors needed. The data from the open and axial coding also brought to the surface some of the competing themes in management such as course budget and timing, professional expertise and stipulated guidelines.

The raw data collected were documented and further analyzed in terms of meeting the needs of the MBBS curriculum. The document analysis also provided rich text that provided feedback and direction for the researchers to improve the management of the Selective choices given to students in the following years.

Since then, from 2008 until 2010, the researchers created new Selective choices for students, designed a proper guidebook for reference and brought in experts as guest tutors in order to provide better experiences for the students. Some of the Selective choices were designed outside the norm in medical curricula. Different teaching methodologies and pedagogies were also used in some of the Selective choices. Therefore it was imperative to find out if these educational activities were beneficial to the medical students in order to shape future doctors.

For this pilot case study, the researchers used the qualitative approach of semi-structured questionnaires with open and closed-ended questions. The closed-ended questions were analyzed using the descriptive analysis of frequencies and percentages through SPSS (Statistical Package of Social Studies) software. The open-ended questions using Pendleton's evaluation tool of 'what worked well' and 'what did not work well' were analyzed using qualitative analysis utilizing common themes with open and axial codes. The researchers also noted some of their observations.

5. Results and Discussion

The results of the pilot study provides valuable insights into the Selective courses offered at Monash University which are discussed in detail as follows:-

Reasons for Students' Selective Choices

Studies have shown that the decision and pattern of a student's choice of medical specialty generally takes effect during students' elective experiences and clinical training (Sobral, 2006). In this study the main reasons given by students for choosing a particular Selective included the opportunity to acquire new knowledge and skills (35.5 per cent), the prospects of having fun and excitement (24.4 per cent) and a general interest in the topic chosen (20 per cent) (Table 1). A study conducted by Mihalynuk *et al.,* (2006) revealed that students choose Selectives which would add to their existing skills, knowledge and future career choice. Arguably, understanding students' views about future career choices and training needs to help establish and realign future teaching programs. It was observed that students were keen to learn and apply the new knowledge and skill they had acquired through their Selectives. This was evident in their final presentation of their Selective course. From the observations, students have shown improvements in confidence level, ability to work with their group mates and communication skills.

Table 1: The Number One Reason for Students' Selective Choice

Reason	Frequency	Percentage
To acquire new knowledge and skills	32	35.5
It looks as if it might be fun, exciting, relaxing and opportunity to travel	22	24.4
I already have interest in the subject	18	20.0
I think it will help me with my personal development	7	7.8
The Selective gives me the opportunity to come into contact with patients	6	6.7
I like the tutor	3	3.3
I do not need to spend much money and work after school hours	2	2.2
Total	90	100.0

Source: Authors.

Educational Activities that Proved Most Useful

Students rated the site visits (47.8 per cent) and practical exercises (34.4 per cent) the most helpful educational activity in their learning experience. The data from Figure 1 below also shows that only 4.4 per cent of the students found lectures a useful method of teaching delivery. A study which examined the learning styles (Rose, 1987) of students in one particular School indicated that 43.9 per cent were predominantly visual learners. However, 34.4 per cent fell into the kinaesthetic and tactile group of learners. Only a small number, 21.7 per cent, of students declared that they were predominantly auditory learners. This information provided the subject coordinators with the impetus to organize experiences that were more active and 'hands-on' through workshops, laboratory and practical work.

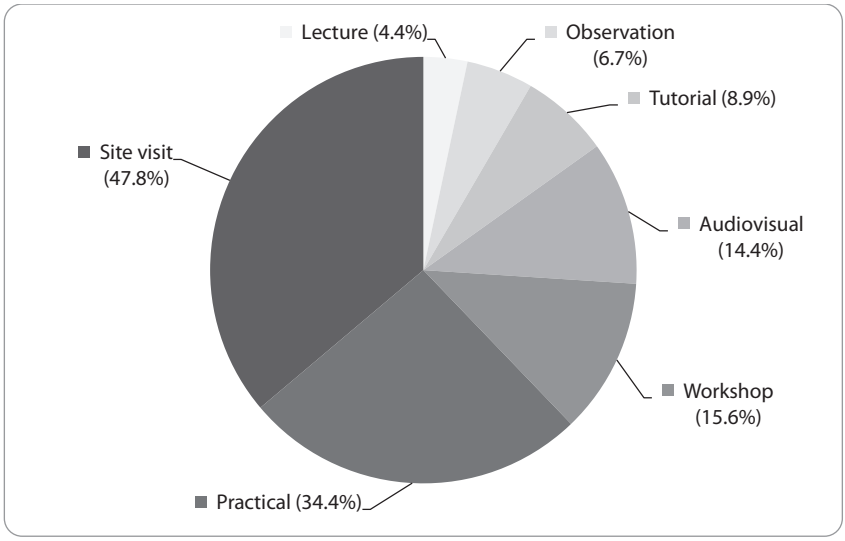
Tutors generally felt that combined teaching methods such as interactional group discussion, site visits, role-play scenarios, ward rounds, tutorials and audiovisual aids were helpful in attracting and sustaining students' attention. It was also observed that students found multiple teaching approaches stimulating and more effective compared to traditional classroom teaching. Several site visits were organized and these were regarded as valuable dimension of learning and provided students with first-hand learning experience. According to Merriam and Caffarella, (1999), creating such learning opportunities will garner critical thinking and reflection that will lead to transformational learning.

Certain Selectives, for instance "palliative care" provided the students opportunity to have direct contact with patients, family members and care providers. Here, the students observed the emotional and psychological stress faced by the patient and their family members. Several findings have shown that it is important for medical students to have contact with patients (Koceic *et al.,* 2010) to develop sensitivity and understanding of cultural beliefs and practices (Lam and Lam, 2009) as well as the transmission of values and messages (Gofton and Regehr, 2006).

The Selectives on "mind, body and soul enrichment" provided students the opportunity to participate in volunteer activities at a refugee centre. These students were exposed to various social, political, economic and health issues of the socially disadvantaged. This experience was observed to have given students an insight into the importance of the social model of health, congruent with findings by Victoria's Department of Human Services (2002).

From the findings, it was also noted that exposure to role play and actual patient visits helped to enhance students' **communication skills** and their **confidence. This was clearly demonstrated during the oral presentation at the end of the Selective course and from the video produced by students.**

Figure 1: The Most Helpful Educational Activity (%)

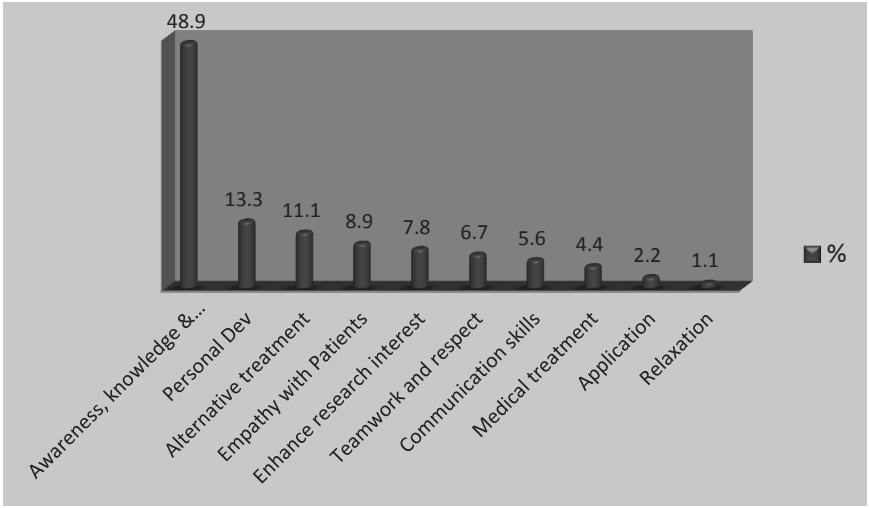


Source: Authors.

Influence that Selectives Have on Medical Students

The main purpose of the Selective program was to provide an opportunity for students to experience broader interests both inside and outside the conventional areas of medical education. However, there were also opportunities to take part in more medically oriented topics which would normally be beyond their level of training such as surgical skills. Results as in Figure 2 indicated that the highest influence Selectives had on students was that it created awareness, increased knowledge and exposure to the topic (48.9 per cent). The experience also gave students the opportunity for personal development (13.3 per cent), contact with alternative treatments (11.1 per cent), opportunity to empathize with patients (8.9 per cent) and enhanced research interests (7.8 per cent). Only a small number of students (1.1 per cent) commented that the Selective provided them with relaxation. Studies have shown that students who were given free choice clerkship electives viewed them as highly regarded learning experiences and a key feature in their decision-making processes (Mihalynuk *et al*., 2006). Other positive by-products of such experiences include the developing of professional attitudes, career commitment and retention within the workplace (Shelley and Webb, 1986; Cherniss, 1991). Making the experiences enjoyable and worthwhile adds to student satisfaction and students' satisfaction levels have been linked with the outcome of the educational process (Ziaee *et al*., 2004).

Figure 2: The Influence Selectives Have on Medical Students



Source: Authors.

What Worked Well in the Selectives

The students were asked in an open-ended question 'what worked well'. Each Selective course was considered to be different and had its own strengths and weaknesses. Therefore, it was difficult to make accurate comparisons between the various topics offered. However, in general most of the students considered the site visits, teamwork and the effectiveness of the tutor as the main factors that worked well. Students who were given the opportunity to visit hospitals commented that the visits were worthwhile because it allowed them to interact with patients. Findings also revealed that students appreciated their tutors' expertise and valued the time spent with them by surgeons and clinicians.

Some students who chose "laboratory research" commented that they learned the value of being independent and the importance of trust and ownership. Entrusted with expensive equipment, they became more cautious and aware. One student commented "We were given ownership over the experiment. Thus, we felt responsible for the outcomes and were more careful".

The students involved in Selectives such as "palliative care", "laboratory research", "zoonotic disease" and "indigenous people" described how the group experience and teamwork were crucial in making their Selective experience a success. The groups valued the opportunity to work as a team and learned to co-operate with one another. One student described their relationship as "We came with different backgrounds, worked together and went back as a family".

Studies have shown that course planning and curriculum structure has a significant relationship with students' satisfaction (Shelley *et al*., 1986). Students

who chose palliative care, mind, body and soul enrichment, laboratory research, indigenous people, zoonotic diseases and marine conservation also commented that the overall planning in their Selective choices was the key factor that worked well for them. Notably, these students also described that the role of Subject Coordinator was an important factor that made the Selective choices work well. Students valued their tutors' expertise, patience, dedication, sacrifice and willingness to spend time with them. Some researchers also believe that learning is influenced not only by how the tutors have planned their courses, but also how the students comprehend this planning (Prosser and Trigwell, 1999).

What Did Not Work Well in the Selectives

Qualitative analysis on 'what did not work well in their Selective' was analyzed and categorized into common themes. The results indicated that lectures and didactic sessions were not favoured by most students. Students also indicated that proper time management and transportation were a problem for some of the Selectives. The time it took to obtain the results of experiments for the laboratory research based Selective was also an issue particularly in the short time span available. The findings also revealed that students were motivated by intrinsic and extrinsic factors that led to certain expectations as shown in other studies (Plunkett *et al.,* 2002). For the Selective on surgical anatomy for instance, even though the students benefited from observing the work of the surgeons and the procedures, they also expected to perform hands-on surgical procedures. This was an unrealistic expectation because hands-on surgeries were not part of the learning objectives. Instead the Selective was aimed at enhancing the students' understanding on the various aspects involved when surgeries are conducted such as communicating with patients, discussing the anatomy, imaging, considering potential complications and indications for surgery. The group that had chosen movies felt they were enjoyable and relaxing, but had expectations of observing a movie production.

Generally the results, although part of an initial pilot, appeared positive and the teaching approaches adopted were positively evaluated by the majority of the students. The findings showed that 81 per cent of the students felt that the learning objectives were fulfilled. Results of the analysis were conveyed to the Subject Coordinators so that relevant changes can be made for the future Selective courses in order to meet the needs and expectations of both students and the School.

6. Limitations

Each Selective was unique in nature and had about 6 to 15 students. This resulted in wide discrepancies in comparing and evaluating the different Selective choices in a quantitative manner. As a result of its unique nature, each Selective

was compared and analyzed separately using sufficient triangulation methods through qualitative approaches to enhance the validity of the themes and take into account each of the strengths and weaknesses of the Selective choices.

7. Conclusion and Recommendations

The study has shown that the Selective choices have been well received by students and tutors. It also revealed that the Selective choices achieved their objectives in providing varied opportunities for Year One medical students to learn outside traditional areas of their medical training. The Selective courses provided valuable experience not only for the students, but also the academic staff involved. Exploring the strengths and weaknesses of the Selective choices gave a useful insight into understanding students' learning experiences. Most of the learning that took place was informal or a hidden curriculum such as transmission of values, understanding of cultural beliefs and sensitivity toward others. The activities designed in the Selective curriculum also enabled students to interact with one another and develop other skills such as leadership, teamwork and communication. This study has highlighted improvements required for the course such as establishing appropriate teaching deliveries and providing better organization and resources.

In conclusion, the 'bottom-up' model (Sabatier, 1986) gave Subject Coordinators freedom to design and develop the Selective courses independently and to deal with the wide range of actors such as students, tutors, external agents and top level managers. This was in contrast to the top-down model which would be more centralized in decision making and implementation. As a result, the Selective courses offered in the Malaysian campus were uniquely designed and different from all the other campuses. Hence the 'bottom-up' strategy led to a better course structure, resources and participation as well as providing the students valuable exposure to widen their knowledge and skills which could prove useful for their future career pathways.

For future research, it would be more conclusive to use other forms of triangulation methods by looking at the perspective of the Subject Coordinators through in-depth interviews and focus group discussions. Future research should also explore significant issues relating to the Subject Coordinators' experiences in the planning of their courses and the educational impact of Selective choices. Such information would provide an important contribution to the students' Selective experience and help shape the future of medicine.

Notes

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[1] This research was considered to be 'low risk' research and approval was obtained through the Monash University Human Research Ethics Committee.

[2] The authors declare that they have no competing interests in the development of this research paper. All authors contributed to the development of the research idea, designing of the questionnaire, data collection and finalizing the manuscript.

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