Assessment Research in Nursing Education: The Case for Q Methodology

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Abstract. *Despite the rhetoric emphasizing the need to become evidence-based practitioners, most nursing educational practice is still not based on comprehensive, cumulative, or robust evidence. The reasons for this are multiple and involve both methodological and pragmatic issues. Applied research in the fields of nursing education takes place in real time and in changing contexts, over which full control is impossible. The purpose of this discussion is to present the key challenges facing educational outcomes-assessment researchers and to call for the increased use of Q methodology in nursing education scholarship. Q methodology is able to tease out prevalent discourses and subjectivities and provide invaluable insight into the various views held by stakeholders. Indeed, it might invite an opportunity to include a largely forgotten voice in nursing educational outcomes-assessment research: the patient. Following a brief review of Q methodology in educational research, research is proposed that would include Q methodology to inform nursing curricula and build more active collaborations between academia and clinical practice.*

Introduction

As in all fields operating outside a well-controlled laboratory, educational outcomes-assessment research is plagued with numerous pragmatic and methodological difficulties. Research projects are often carried out in naturalistic settings that pose threats to the validity of the study, such as loss of subjects, selection bias, contamination, historical events, or maturation (Bordage & Dawson, 2003). In addition, "(e)ducational constructs, like those in other social sciences, are . . . complex, consisting of an array of contextual factors which can interact with each other and the variables under study" (Kember, 2003, p. 94).

These methodological challenges are relevant, if not more acute, in nursing educational outcomes-assessment research. As a practice-based discipline, research needs to assess the effectiveness of interventions, processes, and outcomes both in academic and clinical settings. A problem arises to the extent that nursing programs make claims of the educational value and ability to foster a number of learning outcomes

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that are inherently subjective. The burden of proof is assumed by those seeking to measure and document such effects (Thomas, 1999). As a result, there have been few rigorous, empirical investigations into the outcomes of teaching development (Kane, Sandretto, & Heath, 2002), and thus there exists only a limited evidence base to support educational innovations, such as problem-based learning, on-line/blended learning, and narrative or reflective practice, which are commonly used in nursing curricula. There are no standardized, valid, reliable and sensitive measures of either the process or outcomes of health-care education (Kellagan, Stufflebeam, & Wingate, 2003; Madaus, Scriven, & Stufflebeam, 2003) or any standardized measure of attitudes and behavior change reflecting the higher levels of Kirkpatrick's (1998) stages of evaluation:

Level 1:	(Reaction)	Learner's reactions, thoughts and feelings
Level 2:	(Learning)	Modification of attitudes and perceptions; acquisition of knowledge and skills
Level 3:	(Behavior)	Change in behavior
Level 4:	(Results)	Change in organizational practice; benefits to patients

Instead, nursing education, like other disciplines, is presently built around small-scale, single-case studies using self-designed, non-validated tools of unproven reliability (Thomas & Pring, 2004). There is no denying that attribution in health-care educational outcomes-assessment research is complicated by a dynamic context and a seemingly insurmountable number of confounding variables (Attree, 2006). Demonstrating such explanatory relations would require a number of longitudinal studies, and experimental/quasi-experimental designs with control groups that could establish the impact attributed to the program (Mosteller & Boruch, 2002; Rossi, Lipsey, & Freeman, 2004). Yet, experimental control is not always feasible or ethical in real world research (Robson, 2002). Furthermore, some of the learning outcomes designated as central by the regulatory body dictating nursing curricula seem to defy reliable assessment. Those that do yield to quantitative assessment are not necessarily the most critical, nor do they ensure applicability in practical settings.

With a primary challenge of demonstrating the impact of education on educators, learners, employers, and patients, it is important to clarify the various indicators of impact for each of these stakeholders (Rossi & Freeman, 1993; Walsh, Wallace, & Freeman, 2001). This can inform the design of evaluations to determine the impact of education at the various levels, from the individual to the community and society as a whole. For educators, for example, the impact of nursing educational outcomes-assessment research might be demonstrated by a body of evidence derived from robust studies leading to best practices in their

teaching. For learners, impact could be assessed through knowledge, skills, and attitudes in terms of professional practice. For employers, research impact might be demonstrated by newly qualified practitioners who adequately match the needs of health-care organizations. For patients, the impact would be demonstrated by the provision of safe and high-quality care leading to improved health-care outcomes. Demonstrating the impact of these outcomes is complex, however. Unlike businesses that produce tangible products that can be measured, the business of health-care education is the delivery of a service (Roberts & Priest, 2007). Whereas Roberts and Priest (2007) focus on nursing students as the service users in educational settings, the notion of service users equally applies to those accessing health-care services. Yet patients' views of nursing education are severely lacking in nursing educational scholarship.

This absence is due to the traditional use of educational assessment, which is generally described as a wide range of activities intended to document the effects of educational experiences (Thomas, 1999). These assessment activities focus on students and test scores, written assignments and portfolios representing several years of work, and skills and knowledge acquisition as demonstrated in laboratories or practical placements. Often, however, it is not clear how these assessments reliably translate into competent and professional practitioners who are able to provide safe and effective care to a diverse group of people in a community or an acute care setting. Yet, if the fundamental goal of educational outcomes-assessment research is to provide empirical evidence to inform decisions about how best to deliver curricula (Pawson, 2002; Rossi et al., 2004), nursing educators might profit from a consideration of how the curriculum succeeds in developing competent professional practitioners by including all the stakeholders. Thus assessment would take on a wider scope by including subjectivity as described by Thomas (1999) as the schematic understanding, or learning discourses, of educational experiences. This approach acknowledges that subjective discourses greatly influence the more objective learning outcomes that traditional assessments emphasize (Thomas, 1999) and parallels how patients' subjective views of care received and their overall experiences influence the more objective health-care indicators.

Attree (2006) contends that a synthesis of all existing evidence about health-care education is urgently required and suggests a meta-analysis of both qualitative and quantitative studies. Yet, because educational outcomes-assessment researchers continue to face challenges of measurement and indicators of educational processes that have not been scientifically verified, such meta-analyses may not be enough to move nursing education forward. Before such a meta-analysis can be

useful, a number of difficult questions need to be addressed: How is effective teaching understood? What instruments or methods determine whether teaching is effective or has become more effective since an intervention took place? To what extent do we know the reliability and validity of the outcomes being assessed? Responses to these questions become evident through a considered case for the use of Q methodology by researchers in nursing education.

Q methodology has been widely used in a variety of other disciplines, with a rise seen over the last 15 years in health care (Akhtar-Danesh & Baumann, 2009). Its choice as a methodology in nursing-education scholarship, however, remains limited. The proposition is advanced that the missing variables accounting for the failure of outcomes-assessment research to demonstrate significant distinctive impact from nursing-education programs are the stakeholders' own understandings of what competencies are valued and how they are prioritized within their own subjective discourses. The role of Q methodology in evaluating the achievement of objective competencies may seem incongruous with its inherent focus on individual perspectives and subjectivity. Yet, it is the aim of this discussion to draw attention to the implications of such an approach in terms of educational outcomes-assessment when quality and assessment are considered more broadly.

Why Better Research is Needed

> The most important practical lesson that can be given to nurses is to teach them what to observe—how to observe—what symptoms indicate improvement—what the reverse—which are of importance—which are of none—which are the evidence of neglect—and of what kind of neglect (Nightingale, 1860, p. 105).

As in all other research endeavors, a clear motive driving the decision to conduct a study is essential. In nursing education, given the immense responsibility facing newly qualified graduates, it may seem extraneous to explain why outcomes-assessment research of the teaching strategies and overall course is paramount. Yet, a brief look at the literature demonstrates that this broad, long-term view is rarely acknowledged, and most research findings relate only to the short-term knowledge acquisition of skills that can be demonstrated through end-of-semester written assessment and clinical competence. Rarely are students followed past graduation to explore how well the nursing program itself, or various teaching strategies, have prepared them to work competently in practice. Even less frequently do studies include employers' views on how a particular course or degree program has prepared the nurses they employ.

In a rare study, Williams and Day (2009) use focus-group discussions with nurse employers to explore perceptions of graduates toward

knowledge, competency, and professionalism following the completion of a nursing program using problem-based learning. Other reports that address the competence of newly qualified health-care practitioners suggest they are ill-prepared for the increasing complexity of present day health-care systems (Long, 2004; Lowry, Timms, & Underwood, 2000; Matheson & Matheson, 2009). Most concerning, however, is the absence of studies that include as participants the recipients of practitioners' knowledge and skills to evaluate their views on the effectiveness of the academic experiences. Without this confirmation of the benefits of an academic program, it might be argued that practitioners learn all they need to know about their practice once they are on the job. It seems evident, therefore, that educational outcomes-assessment research should be of paramount importance in nursing education.

What Needs to be Researched

What are the specific learning outcomes that might indicate that nurses are properly qualified and competent to work? This is a contentious issue at the moment. Many in nursing are aware of an ever-widening division between traditional ideas supporting the status quo and progressive ones encouraging change. This is even more pertinent now in the United Kingdom, since the government has endorsed a plan that will require all new nurses to be educated to full-degree level beginning in 2014. This will eliminate the option for students to be employed with a diploma qualification. This division between 'diploma' and 'degree' nurses reflects the tension seen in academia between 'training' and 'education.' Training is perceived as leading to a vocational qualification, whereas education is argued to describe a preparation for lifelong learning and a way of fostering humanity and intellect (Falchikov, 1993). It can be argued that these two views of what higher education ought to be providing influence the pedagogies employed. Training, represented as blindly reproducing a societal status quo, might seek to employ narrow and unchallenging approaches. Education, with its aims of challenging society, might endeavor to foster conflicting ideologies through discussion and collaborative discourse (Falchikov, 1993).

It follows, therefore, that a shift in nursing education to a degree-only qualification demands a concomitant shift from traditional teacher-centered pedagogies toward active, self-paced, and learner-centered approaches. These new teaching strategies require not only significant transitions away from the comforts of expectations and established practices, but also require a dedication to risk-taking, innovation, and an ability to bring about required change (Falchikov, 1993). These challenges are intensified by the demands placed on nurse educators by the Nursing and Midwifery Council (NMC), the external body in the

United Kingdom set up by Parliament to regulate the practices of nurses, midwives, and specialist community public-health nurses. In order to guide nursing schools in developing curricula, the NMC provides policies, competencies, and standards. A few examples of some of the desired outcomes guiding these competencies are a commitment to provide high quality patient-centered care, the application of current knowledge and research to nursing practice, the ability to work in partnership with other professionals, and the demonstration of fitness for practice and a commitment to lifelong learning. Therefore, nursing competence requires the development of technical, cognitive, and interpersonal skills, which demand varied ways of knowing and understanding. Furthermore, it is an expectation that their educational preparation will equip nurses to understand, contribute to, and work within the context of their profession and to analyze, adapt to, manage, and eventually lead the processes of change (NMC, 2008).

So how do nursing programs ensure these competencies are met and what is to be evaluated when nurse educators are assessing if they've met these goals? Ironically, although painfully descriptive in its demand for required competencies, the regulatory board leaves decisions about the strategies and methods of teaching, learning, and assessment up to the institutions themselves to determine. It is only specified that they should complement the learning outcomes associated with health-profession programs without endorsing any one or combination of approaches over others (NMC, 2008). Individual nursing programs are, therefore, fairly unrestricted in their means of delivering the curricula so long as graduates are competent professionals upon graduation. Yet, most nursing education outcomes-assessment research does not address issues beyond the learners' knowledge and skills acquisition, at levels 1 and 2 of Kirkpatrick's (1998) model (see p. 69 above), leaving a number of the competencies unassessed.

Whose Involvement is Needed in Outcomes Assessment

Given this very flexible invitation to meet specified competencies required by the regulatory board, the next issue to be addressed is who to include in a research study evaluating the effectiveness of a teaching strategy or overall program. If evaluating a particular teaching strategy, such as the introduction of a technological tool or a new pedagogical technique, the first step is generally to investigate whether students liked it and engaged with it. Self-reported end-of-module evaluations and traditional grades are commonly used for this purpose.

Q methodology is occasionally employed within and outside health care in educational research studies evaluating the effectiveness of new teaching strategies and course evaluations. Valaitis, Akhtar-Danesh, Eva, Levinson, and Wainman (2007), for example, seek academic, student,

and hospital staff perceptions of a web-conferencing tool as a support strategy to teaching and learning in health sciences. Akhtar-Danesh, Brown, Rideout, Brown, and Gaspar (2007) explore nursing educators' views towards a new collaborative approach to delivering a nursing curriculum in a degree program. In two related studies on the introduction of simulation in nursing curricula in seventeen nursing schools in Canada, Baxter, Akhtar-Danesh, Valaitis, Stanyon, and Sproul (2009) recruited nursing students and in Akhtar-Danesh, Baxter, Valaitas, Stanyon, and Sproul (2009), nurse educators are involved in sorting statements relating to their experiences with simulation.

Oring and Plihal (1993) recruited students from two programs using different teaching approaches and asked them to complete two Q sorts. In one they described their perceptions of their actual program and in the other their perceptions of an ideal program. Ramlo, McConnell, Duan, and Moore (2008) and Jurczyk and Ramlo (2004) used Q methodology as an innovative way of performing course evaluations. Deignan (2009) investigated the views of staff and students towards the use of inquiry-based learning as an alternative to traditional lecture-based teaching methods. These applications of Q methodology resemble other methods used to evaluate courses or teaching strategies while providing more subtle and distinctive indicators about what is liked or disliked by the recipients of the specific intervention, and thus provide more information on how best to adapt curricula to fit the needs of the stakeholders involved.

In addition to using Q methodology to evaluate responses to specific teaching strategies, it can be used more broadly to investigate general attitudes about the teaching and learning process. Valenta, Therriault, Dieter, and Mrtek (2001), for example, examined clusters of opinions held by students towards distance learning and its use with both traditional undergraduate as well as non-traditional graduate adult learners. Bowe (2008) explored attitudes toward instructional technologies amongst staff in colleges of education, while Petit dit Dariel, Wharrad, and Windle (in press) recruited staff and strategic administrators within a school of nursing to explore issues influencing their decisions to integrate technology into teaching practice. Other studies used Q methodology to examine teachers' attitudes and values towards changes in pedagogical innovation (Falchikov, 1993), to construct e-learners' learning styles (Chung-chu, 2008), and to better understand the conceptions of teaching and learning as perceived by staff and students (Lecouteur & Delfabbro, 2001). All these studies included participants directly involved in the teaching and learning process.

In Deignan (2005), however, the author takes a step beyond recruiting the usual participants and expands his participant sample to

include a group of stakeholders commonly left out of educational research. In this study, staff, students, and managers from partner organizations complete Q sorts, and the findings are then fed back into the educational curriculum. Similarly, Block (1994) used 'MED-Q' to evaluate a new pathway introduced at the Harvard Medical School. Students, academic and clinical staff provided Q sorts in order to explore professionally relevant attitudes and attributes of medical students. Gaebler-Uhing (2003) investigated the degree to which general pediatric doctors agree on the essential skills of what makes a 'good' resident in these two settings.

Indirectly related to education, Thompson, McCaughan, Cullum, Sheldon, Mulhall, and Thompson (2001) used Q to examine how nurses in practice use sources of information when making clinical decisions in order to provide insight into how nurses draw on skill sets to inform their clinical judgments. Barker (2008) examined the nature of mental health nurses' knowledge in practice to address a perceived disparity between the knowledge seen as appropriate by academics, reflected within the mental-health nursing curricula, and the reality of clinical practice. These studies are significant in their focus on the authenticity of their evaluation by using employers, supervisors, or colleagues as participants, and set an example for the potential Q methodology can have in better informing curricula that are responsive and adapted to the realities of health-care practice in the 21st century.

This relevance to contemporary practice is important as questions frequently arise regarding clinical competencies and students' abilities to perform in the employment setting after graduating from their nursing program. In a rapidly changing health-care environment, a comprehensive evaluation of performance and effectiveness in delivering a service is crucial. As expectations in the marketplace change, nurse educators must respond accordingly. Academic providers are charged with the increased responsibility of evaluating their educational programs to ensure that graduates are prepared to meet expectations of employers and the needs of the public. As Roberts and Priest (2007) emphasized, the evaluation of nurse education is part of an organization's quality-enhancement procedures and should include stakeholder feedback on lectures, modules, and entire programs. Yet, although the authors stated that good business is dependent on the long-term relationships derived from stakeholder perceptions of service performance, the stakeholder in this case is limited to students. Missing is the voice of the patients for whom nurses care and their views on which competencies they find essential. The ultimate stakeholder—the public—should not be underestimated.

In the United Kingdom there are presently few standard measures that nursing programs can use to evaluate their success beyond module

results, self-expressed satisfaction surveys, and employment rates of new graduates. Once in a health-care setting, the quality indicators of nurse performance tend to be based on ward or workplace-specific performance reports. These indicators might include such things as patient satisfaction, pain management, skin integrity, infection, patient injury rate and assessment, and implementation of patient-care requirements. These indicators provide little information to support the effectiveness of specific teaching strategies or overall curricula used in nursing programs and fail to address the impact nursing curricula have on developing the nursing competencies that in turn lead to excellent patient care. Do the competencies actually reflect the care required by patients? To what extent do patients and their families actually value the competencies set by the NMC? How do they perceive these are demonstrated by the nurses who care for them? It is imperative that educational research begin including patients in the evaluation of nursing programs.

A few studies using Q methodology (Scharf & Caley, 1993; Whiting, 1955) sought patients' voices to evaluate caring behaviors and interpersonal relationships in a clinical setting. Whiting (1955) explored the similarities and differences between nurses' and patients' perceptions of the nurse-patient interaction. Scharf and Caley (1993) included physicians, nurses, and patients to examine nursing behaviors considered important in patient care in a coronary-care setting. Although there have been several attempts to engage patients in research using other methodologies, the tendency is to develop patient satisfaction surveys that do little to provide meaningful and balanced criticism of all aspects of care, and leave out those elements that actually contribute to positive or negative satisfaction. Patient satisfaction, much like student satisfaction following a new teaching strategy, is a necessary but insufficient means of evaluating outcomes in a meaningful manner. Q methodology's greatest benefit is its ability to reveal and enable the interpretation of different viewpoints through a systematic and replicable method (Chinnis, Summers, Doerr, Paulsom, & Davis, 2001). Another advantage of using Q methodology is its potential to provide researchers with a greater sense of the perspectives that exist in order to set the stage for a more probing measurement device to be developed (Brown, 2003).

When Outcomes Assessment is Needed

Traditional educational outcomes-assessment research using short-term evaluative strategies have focused on learner's satisfaction or engagement and the ability to recall facts and demonstrate skills. In these circumstances, research timing is fairly straightforward and can make use of simple pre- and post-tests (before the module begins and

prior to, or shortly after it has ended). In a unique clinical study using Q methodology, Ryan (1992) asked primary caregivers and nurses employed by a hospice to complete sorts shortly following a death in order to explore those nursing behaviors that were perceived as the most and least helpful during a bereavement period. This study is another good example of how Q methodology could evaluate higher levels of Kirkpatrick's (1998) evaluation stages if clearer links could be made to academic programs in developing those nursing behaviors, such as by conducting the research in a longitudinal study following recent graduate nurses.

These links are critical because both the NMC's expectations of nurse competencies and the move to an all-degree profession suggest that nurses require more than a basic accumulation of facts from their educational experiences. Rather, what is essential is the ability to critically apply these facts to a variety of different situations. Evaluating this set of skills demands a number of different educational assessments, and thus the timing of its occurrence must be carefully considered. A breadth of experiences is required for nurses to demonstrate their ability to apply their knowledge in different clinical settings given various responsibilities. Students, therefore, would need to be systematically exposed to a number of different authentic scenarios for a complete evaluation to be realistic. Since the possibility of students being exposed to all these scenarios during their nursing program is increasingly limited, most of the competencies mandated by the NMC would require the evaluation process to extend beyond the length of modules or brief clinical placements. Hence in addition to the current use of clinical skills labs, practical placements, and other simulation training, a longitudinal research process that could examine nursing practice six to 12 months following qualification would be useful. Findings could thus be given to nursing programs to better inform their decisions on where in the curriculum to best invest time and resources.

Such an example can be seen in a non-health-related Q-methodology study by Knightley and Whitelock (2007) that used a number of different methods to track the changes in self-concept of mature undergraduate women returning to school after a gap from formal learning. This longitudinal study used a self-reported questionnaire, a Q sort, and interviews both before they begin the course and six months after they completed the course. Their findings stand to contribute to the importance of longitudinal studies in informing curricula. In nursing education, outcomes evaluation needs to take account of the time it can take to notice the impact of educational strategies and curricula. Such longitudinal approaches can also contribute to the creation of more collaborative ties between academia and practice.

Some Further Directions for Q Methodology

The fundamental principle of academic study for pre-registration nursing students is to lay the foundation for career-long professional development and lifelong learning that will support best professional practice and maintain professional standards (NMC, 2008). To date, the assessment of theoretical principles occurs in classrooms or using online learning-management systems. Clinical skills are assessed in labs using an approach called the Objective Structure Clinical Examination (OSCE) (Harden, Stevenson, Wilson Downie, & Wilson, 1975). Despite some critiques of OSCE assessments and its broad pass/fail marking system, many in health-care education trust it is a valid and fair method of clinical examination (Ross, Carrol, Knight, Chamberlain, Fothergill-Bourbonnais, & Linton, 1988). Yet, it can be argued that the sterile and controlled lab environment has little to do with the intense, fast-paced, stressful, and often unpredictable realities of the work place.

These methods, therefore, are a necessary yet insufficient approach to evaluating nursing programs and teaching effectiveness. It is proposed that they could be further informed by the use of Q methodology to evaluate the perceptions stakeholders have on the impact of nurse education. Q statements could be developed using the NMC's competencies, as well as interviews with the various stakeholders on their perceptions of nurse competencies. The stakeholders could then be asked to rank order the competencies using a variety of conditions of instruction in order to explore the collection of opinions or discourses surrounding the relevance of each competency.

Findings might demonstrate differences between the branches of nursing (mental health, children, learning disability, and adult nursing), with certain competencies perceived to have greater or lesser value. It might be that patients prioritize competencies as less significant, contrasting those perceived as critical by nurse educators, students, or employers. Such variation could then generate discussions about the implications of such findings. The factors arising from the Q-methodology study, along with measurements with other tools, could then be used to inform decisions about the most appropriate and effective investments of resources to ensure that curricular development remains dynamic and reflective of the needs of all the stakeholders. It is important to specify that this process is not to be a singular event, but rather a continuous research and evaluation mechanism that would operate as a feedback loop between practice and academia, with Q methodology being used as a tool to evaluate the unique and subtle perceptions of all the stakeholders.

Conclusion

The methodological challenges facing researchers undertaking educational research within health-care contexts are multiple and complex. Thus, quick and single solutions are certain to be ineffective. Challenges are more likely to be resolved by methodological debate within and across the various health-care disciplines, increased stakeholder involvement, and methodological collaboration rather than competition. More research is needed not only to develop theory, methodology, and outcome measures, but to determine which teaching strategies work, how, and in what conditions. Empirical evidence supporting or challenging certain teaching strategies needs to be made accessible and relevant to practitioners so they can use it to inform their practice. Practitioners need to evaluate their tacit knowledge, become more involved in education scholarship, and active in determining research priorities. Research designs need to combine scientific rigor with the acknowledgment of context using mixed methods as an essential part of the solution for developing evidence-based practice in nursing education. This discussion has presented the potential for Q methodology to contribute valuable insights to complement other methods.

When discussing the move to an all-degree nursing profession the chief nursing officer for England, Dame Christine Beasley, noted that the change was a "small but important step" which would help give nurses the "real ability to think and make decisions" as care becomes more complex (Ford, 2009). Degree-level education is thought to provide new nurses with the decision-making skills they need to make high-level judgments in the transformed National Health Service. It is claimed as "the right direction of travel if we are to fulfill our ambition to provide higher-quality care for all" (Ford, 2009). This change in educational achievement is not without its antagonists, however, who believe the move to degree-only entry might lead to a narrowing of the diversity of backgrounds nurses currently come from, and consequently a profession which is less reflective of the society it cares for. Yet, what patients think about this debate remains unknown, as do their perceptions of the type of care they will be receiving as a result of a shift to degree-level education. Q methodology is specifically designed to explore this variety in discourse and would be an invaluable tool, along with other methodologies, to evaluate educational outcomes, inform policy, and lead to the development of more responsive nursing curricula. By combining Q methodology with other research techniques such as validated measurement tools, interviews, performance evaluations, and longitudinal approaches, a more thorough and accurate evaluation of nursing programs can be achieved.

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