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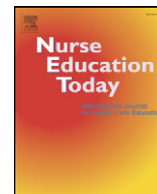
Psychometric properties of the Scale for Quality Evaluation of the Bachelor Degree in Nursing Version 2 (QBN 2)

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SUMMARY

To evaluate all the variables that affect nursing education is important for nursing educators to have valid and reliable instruments that can measure the perceived quality of the Bachelor Degree in Nursing. This study testing the Scale for Quality Evaluation of the Bachelor Degree in Nursing instrument and its psychometric properties with a descriptive design. Participant were first, second and third year students of the Bachelor Degree in Nursing Science from three Italian universities. The Scale for Quality Evaluation of Bachelor Degree in Nursing consists of 65 items that use a 4 point Likert scale ranging from "strongly disagree" to "strongly agree". The instrument comes from a prior version with 41 items that were modified and integrated with 24 items to improve reliability. Six hundred and fifty questionnaires were completed and considered for the present study. The mean age of the students was 24.63 years, 65.5% were females. Reliability of the scale resulted in a very high Cronbach's alpha (0.96). The construct validity was tested with factor analysis that showed 7 factors. The Scale for Quality Evaluation of the Bachelor Degree in Nursing, although requiring further studies, represents a useful instrument to measure the quality of the Bachelor Nursing Degree.

Introduction

The Italian National Agency for the Evaluation of Universities and Research Institutes (ANVUR) (2012) defined the quality in university education as the university's ability to establish valuable objectives and achieve them in a way to measure and increase the contiguity between objectives and results. Since the concept of quality in nursing education is wide and susceptible to analysis from a variety of evaluation methodologies, we focused our attention on the concept of perceived quality that favors interactive methodology and is focused on students (Saarikoski et al., 2002; Chan, 2003; Hosoda, 2006; Kari-Sand, 2009).

Evaluating students' satisfaction for the university education is important because it improves the competition among universities, the quality of services students are provided and the prestige of university institutions (Hughes, 2000; Roberts, 1998). It is essential to measure in the academic world how educational aspects directly affect the students and indirectly the training environment with its physical, human, interpersonal and organizational dimensions (Knowles, 2007). It is also essential to evaluate how relational dynamics, cultural and clinical aspects influence the quality of nursing students' education (Cust, 1996).

To evaluate all these variables that affect nursing education it is important for nursing educators to have valid and reliable instruments that can measure the perceived quality of the Bachelor Degree in Nursing Science. Vellone et al. (2007) developed the Scale for Quality Evaluation of the Bachelor Degree in Nursing (QBN). This was a 41-item Likert scale comprising 10 domains. This instrument was tested for its content and discriminant validity and for construct validity as well. Reliability was tested by Cronbach's alpha but, while the first 6 factors showed adequate reliability (Cronbach's alpha ≥ 0.70), 4 factors did not. Therefore, the aim of this study was to modify the QBN in order to have a second version of the instrument with better psychometric properties of validity and reliability. The modified instrument was referred as the Scale for the Quality Evaluation of the Bachelor Degree in Nursing Version 2 (QBN 2).

Background

For the past 30 years, there has been overwhelming evidence that new graduate nurses are not prepared to enter the workforce

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(Shipman et al., 2012). The American Society for Quality identifies four teaching quality dimensions: responsibility, curricular alignment, assessment and student satisfaction (Brown and Marshall, 2008). An approach based on the process of Continuous Quality Improvement (CQI) (Deming, 1986) showed that all the decisions had to be based on obvious facts demonstrated by objective data analysis, and that all the stakeholders had to know at best their own job description; therefore students, administrators and managers have to be part of the same Continuous Quality Improvement team (Brown and Marshall, 2008; Germini et al., 2010). One of the main learning quality issues concerns students' perception about their own achievements (Kari-Sand, 2009), making it necessary for educators actually evaluate to the students' results and their learning throughout the process (Shipman et al., 2012). The impetus for transformation in nursing education has created the need for educators to evaluate effectively the quality of student achievement and learning through the educational process (Shipman et al., 2012).

The relationship between teacher and student affects the undergraduate performance (Orland-Barack and Wilhelem, 2005; Alvaro et al., 2009) and is considered a positive aspect between teachers and students (Wilkes, 2006). Student evaluation should create a supporting learning environment and a positive atmosphere for the student (Jokelainen et al., 2011; Saarikoski et al., 2002; Pearcey and Elliott, 2004) that encourages good relationship with colleagues, discussions and encourages students' curiosity (Kell and Jones, 2007; Senge, 2006; Henderson et al., 2012; Chan, 2001). In addition, during the learning process students want to be treated as individuals and colleagues so students' learning independence, responsibility and self-management are increasingly important (Andrews and Chilton, 2000). Some authors (Pellatt, 2006; Bray and Nettleton, 2007; Webb and Shakespeare, 2008) have suggested organizing teaching in a formal, impartial, constructive and objective manner without the influence of other factors like friendship. Furthermore, the highlights for clinical learning are acceptance and orientation, intermediate evaluation (formative) and final evaluation (certification) (Kim, 2003; Scalorbi and Burrai, 2008). In this perspective, some authors stated that classroom learning didactic does not have any advantages compared to on-line learning didactic (Billings, 2000; Schoech and Helton, 2003; Bata-Jones and Avery, 2004; Wells and Dellinger, 2011), but there are still controversies about the issue (Rovai, 2002; Frith and Kee, 2003). In this context it is also important the "peer" student relationship (Bonnel et al., 2007; Bulfone et al., 2008): the discussion among colleagues is considered a teaching method (Stevens and Levi, 2005), even if the students are reluctant to express negative opinions on colleagues or correct them based on didactic value (Chaves et al., 2006).

In the Italian Bachelor Degree in Nursing there are different teacher categories with different backgrounds: nursing teachers have different experiences so a systematic evaluation is important (Herbert et al., 2002). The number of sessional teachers is increasing followed by a decreasing number of tenured teachers, especially in practical disciplines like nursing (Kovner et al., 2006; Thedwall, 2008). However, from the literature it emerged that sessional teachers are recruited with less strict criteria than tenured teachers (Herbert et al., 2002; Andrew et al., 2010), consequently, sessional teachers are often lacking of pedagogical notions and didactic principles (Herbert et al., 2002; Anibas et al., 2009; Andrew et al., 2010). This is perceived by the students as weak commitment, lack of preparation, inappropriate qualification and inadequate performance management (Percy et al., 2008; Anibas et al., 2009; Halcomb et al., 2010). Sessional teachers' grades are higher than those given by tenured teachers (Kezim et al., 2005; Cavanaugh, 2006; Salamonson et al., 2010). Furthermore, Cavanaugh (2006) indicates that this is a strategy to reduce students' potential complaints about teaching and to improve their teachers' evaluations (Landrum, 2009; Salamonson et al., 2010). However, it was shown that for sessional teachers positive evaluations, high passing rate and a low number of students' negative comments can have an important

role on contract renewal (Halcomb et al., 2010). According to students' evaluations, sessional teachers are often considered inexperienced (Salamonson et al., 2010); and since those teachers are seen as more enthusiastic in their job (Green and Baird, 2009) compared to tenured teachers, in their classes students often learn more. On the contrary, students attending the last year of course tend to evaluate tenured teachers better than sessional ones. Some authors state that this is due to students' maturity (Salamonson et al., 2010), and the need of a wider and professional nursing knowledge that is likely to be provided by tenured teachers (Egan and Jaye, 2009).

Another important concept to consider when measuring degree courses' quality is the dropout prevention, the students abandoning the courses are usually those who had low grades in pre-entrance tests (Houltram, 1996; Kevern et al., 1999; Pryjmachuk et al., 2009), with parents who did not graduate, with a lower socioeconomic status; other important factors are student's age (Houltram, 1996; Kevern et al., 1999; Mulholland et al., 2008; Pryjmachuk et al., 2009), gender (Mulholland et al., 2008; Pryjmachuk et al., 2009) and course's topic (Higher Education Funding Council England, 2000; McMillan, 2005; Jeffreys, 2007). However, just one factor can be sufficient to cause drop out. Almost 50% of the students say that they have two causes of courses drop out (Glossop, 2002). Furthermore; factors promoting course pursuance are being taken care of by a competent nurse (Sadler, 2003; Lai et al., 2008); conceptualizing "being" a nurse, and not "acting like" a nurse (Kotecha, 2002); having good tutors or close relatives performing the same job (Bowden, 2008); having tenured teachers instead of sessional ones (Colalillo, 2007; Sutherland et al., 2007); having the chance to share the same experiences with fellow students (Rudel, 2006; Bowden, 2008; Green and Baird, 2009); developing a "sense of belonging" to the campus (Levett-Jones et al., 2009). Moreover, a positive profession's image strengthens the vision of a career as a nurse, while a negative image interferes with career planning (Pearcey and Elliott, 2004). A clear comprehension and appreciation of students' satisfaction are fundamental to improve educational processes, education's quality and to evaluate institutional efficiency (Kantek and Kazancı, 2012).

Aim

The aim of this study was to test the psychometric properties of the QBN 2. Specifically, we tested the validity of the QBN 2 by exploratory factor analysis and then we tested its internal consistency and test–retest reliability.

Methods

Design

A descriptive design was used to carry out the study.

Instruments

The Sociodemographic Questionnaire

This instrument was developed by an expert panel (formed by a Nursing Associate Professor, three nurses with a PhD in Nursing Science, one nursing researcher, three Bachelor Degree in Nursing programs' directors), in order to collect information such as high school diploma and grade obtained, any formative experiences with other faculty and/or university degree courses, average grade for taken exams, lesson attendance percentage, how far was the campus from where they lived and the means of transport.

The Scale for Quality Evaluation of Bachelor Degree in Nursing Version 2 (QBN 2)

It consists of 65 items that use a 4 point Likert scale ranging from "strongly disagree" to "strongly agree". The instrument comes from a prior version with 41 items (Vellone et al., 2007) that were modified

and integrated with 24 items to improve reliability. The items' modification and integration were done because, in the prior version of the scale some items investigated with one question more than one content and consequently they loaded on more than one factor. Also, for this reason, the unclear factors were not well identified. For example, one factor of the QBN Version 1 was named "Characteristics of teachers and clinical tutors" and another was named "Tutor competences": indeed competences of tutors are also characteristics. Examples of items are: *At the beginning of the course I received sufficient information about the program and its educational objectives*; *There was an adequate correspondence between acquired theoretical knowledge and the clinical training objectives*; *The methods of the examinations have been clearly defined.*

Sample and Procedures

We selected a convenience sample of students from three different universities in Lazio and Calabria regions. Participants were first, second and third year students of the Bachelor Degree in Nursing Science. No exclusion criteria were established for the study so the instruments were administered to all students. The questionnaire was administered in the classroom outside of lessons after explaining the purpose of the study and the students were reassured that the questionnaires were anonymous. A total of 663 participants were asked to take part in the study but thirteen students form Lazio and three from Calabria regions refused to participate in the study without giving a particular reason. The final sample was composed by 650 participants. Twenty five students of the University of Rome "Tor Vergata" Sora Campus volunteered to complete the SQEBDN 2 after 2 weeks from the first administration for test re-test.

Ethical Considerations

The study was approved by the Dean of each university and the permission of each school department's director was obtained. Participation was voluntary and the students were told that they could leave at any time, being involved would have no effect on course's attendance, and that confidentiality would be maintained at all times. The researcher was not aware of the student's identity.

Data Analysis

Descriptive statistics were computed on the student's sociodemographic data. Specifically, mean SD, and frequencies were computed. Descriptive statistics were also used to describe item responses. Construct validity of the QBN 2 was established by exploratory factor analysis (EFA). EFA was performed with the method of principal axis factoring with promax rotation. To choose the best factor solution the following criteria were considered: the theoretical conceptualization of the quality in nursing education, the number of items not loading on any factor, the presence of factors with few items, the number of items loading on more than one factor, and the interpretability of the factors (Barbaranelli, 2007; Vellone et al., 2013). For item retention was applied the criteria of loading $\geq$ .30 (Barbaranelli, 2007). Applying these criteria to 7 factor solution was preferred. Internal consistency reliability of the factors extracted by EFA was tested by Cronbach's alpha. In addition also test–retest reliability was performed by intraclass correlation coefficient (ICC). Both for Cronbach's alpha and ICC a coefficient $\geq$ .70 was considered adequate reliability. The level of significance was set at p < 0.05. The software used for data analysis was SPSS 19.0.

Results

Socio Demographic Characteristics

A total of 663 participants were asked to take part in the study but 13 refused to participate without giving a particular reason. The final sample

was composed by 650 participants. Table 1 reports the sociodemographic variables regarding the participants. Students had a mean age of 25 years and were mostly females. All year courses were equally represented in the sample but the third year was less. The average exams' grade achieved by the students was twenty-four on a maximum score of thirty. These data, in reference to age and gender, are very similar to the Nursing Bachelor Degrees' Students' National Statistics, where the age range mostly represented was between 21 and 30 years and females represent the 69% of all students (Italian Ministry of University, 2013).

Validity Testing

EFA resulted with a 7-factor solution which is reported in Table 2. The first factor was named *Quality of teacher*, describing teacher features such as capability to stimulate students' interest, make correlations with other disciplines, use of different teaching methods and encouragement of students. The second factor was named *Quality of services and support organization* describing classroom and clinical learning, library and other services offered to the students, administrative staff qualities. The third factor was named *Quality of clinical training and grouped items* regarding tutorship and clinical tutors' competences. *Didactic organization and quality of evaluation* was the name given to the fourth factor since in included didactic aspects and teaching aids, the didactic organization of bachelor degree courses (pre-requisites and disciplines coordination and management, examination modality and the use of teaching aids). The fifth factor was named *Interests and objectives* because of its semantic contents pertaining to the topics of the disciplines and their relevance. The *Quality of administrative services* was the sixth factor with items investigating the registrar's office staff and services. The seventh factor was named *Identity and belongings* and comprised items investigating the sense of professional identity and belonging. All seven factors explained the 51.8% of the total variance.

Reliability Testing

Internal consistency reliability was satisfactory for each QBN 2 factor (Table 3), ranging from 0.94 for the Quality of teacher to 0.76 for the *Interests and objectives factor*.

Test–retest reliability was satisfactory for the factors *Quality of clinical training* and *Didactic Organization and Quality of Evaluation* but unsatisfactory for the factors *Quality of teachers*, *Quality of services and support organization*, *Interests and objectives*, *Quality of administrative services*, *Identity and belongings* (Table 4).

Table 1
Sociodemographic data about the sample (N = 650).

	Mean	SD
Age	24.63	5.4
	N	(%)
Gender		
Female	426	(65.5)
Male	224	(34.5)
School of nursing		
University of Rome "Cattolica del Sacro Cuore" Rome Campus	140	(21.5)
University of Rome "Tor Vergata" Fatebenefratelli Campus	53	(8.0)
University of Rome "Tor Vergata" Marinella Di Bruzzano Campus	116	(17.8)
University of Rome "La Sapienza" "IFO" Regina Elena Campus	89	(13.7)
University of Rome "Tor Vergata" Sora Campus	252	(38.8)
Course year		
I year	223	(34.3)
II year	238	(36.6)
III year	165	(25.4)
Out of course	19	(2.9)
Average exams'grade (SD)	23.94	(6.5)

Table 2
Exploratory Factor Analysis of the QBN 2.

Pattern matrix

	Factor						
	1	2	3	4	5	6	7
Item 49. Teachers have been understanding towards students' problems	**.787**	−.023	−.028	.124	−.184	.015	.029
Item 52. Teachers gave indications on study method for their discipline	**.769**	.057	−.013	.060	−.081	−.040	−.107
Item 42. Teachers stimulated students' active participation	**.748**	.023	.051	−.140	.092	−.086	−.001
Item 53. Teachers were emotionally stable	**.708**	.063	−.031	−.228	.094	.003	.063
Item 39. Teachers lectured in a clear and satisfactory way	**.698**	−.066	−.005	.134	−.107	.073	−.026
Item 48. Teachers based their lectures on students' learning abilities	**.697**	−.006	−.038	.051	.093	−.041	−.021
Item 47. Teachers have been able to combine theoretic and clinical aspects while lecturing	**.679**	.239	.056	−.140	−.067	−.073	.008
Item 50. Teachers used several teaching methods at the same time (multimedia tools, demonstrations, group discussion, written tests, integration with other teachers, etc.)	**.676**	.024	−.052	.135	−.064	−.011	.009
Item 43. Teachers used teaching aids adequately (blackboard, transparencies, slides, computer, video, etc.).	**.665**	−.010	−.021	.046	−.017	.030	−.037
Item 41. Teachers stimulated interest for their discipline	**.606**	−.198	−.012	.208	.234	−.051	−.077
Item 51. Teachers were able to manage the class	**.578**	.212	.109	−.105	−.126	.037	−.029
Item 45. Teaching aids used and suggested by teachers were adequate for the study of their discipline	**.572**	−.131	.033	.085	.194	.018	−.061
Item 65. Teachers were competent teaching their discipline	**.559**	−.114	.020	.128	.094	.038	.031
Item 40. Teachers thoroughly answered to students' clarification requests	**.547**	−.111	−.016	.033	.216	.080	−.015
Item 46. While lecturing teachers made connections with other disciplines	**.540**	−.035	−.022	.092	.030	.053	.057
Item 54. The optional didactic activities were helpful for learning purposes	**.533**	.233	.019	−.183	.249	−.030	−.025
Item 44. Teachers provided the students lecture notes or a bibliography to study on	**.474**	−.045	.086	−.011	.135	.119	.162
Item 25. Integrated courses have been actually held in an "integrated" way	−.004	**.835**	−.043	.127	−.088	−.104	.081
Item 16. The library was well organized (business hours, accommodation, staff availability, efficient consultation, etc.).	.013	**.789**	−.033	−.094	.065	−.015	.053
Item 14. The simulation laboratory was adequate (student could see, could hear, could take notes, could find a seat)	.034	**.781**	−.048	.081	−.136	−.057	.055
Item 17. The number of computers available to the students was adequate	.001	**.701**	−.099	.111	−.046	−.022	.106
Item 8. Didactic activities were well executed in the simulation laboratory	−.084	**.674**	.009	.160	−.024	−.023	.058
Item 21. The restaurant service was well organized	−.094	**.568**	.015	.014	.115	.009	−.077
Item 13. Teaching aids were adequate and sufficient	.020	**.548**	−.032	−.265	.374	.109	−.106
Item 12. The classrooms where the lectures took place were adequate (we could see, hear, take notes, find a place to seat)	.076	**.441**	.029	−.130	.373	.089	−.177
Item 15. The dressing rooms were adequate for students' needs	.014	**.391**	.152	.076	−.033	.003	−.036
Item 9. The time dedicated to hands-on practice has been sufficient	.087	**.337**	.043	.025	.138	.035	−.031
Item 22. Adequate space for recreational activities was available (to have a coffee, to have a conversation etc.)	−.014	**.295**	.118	.161	.113	−.045	−.046
Item 7. The didactic activities in small groups were well carried out	−.066	−.020	**.792**	−.281	.068	.034	.067
Item 60. The nurses involved in clinical teaching had field experience	.011	−.106	**.762**	.001	−.076	.000	.026
Item 57. The clinical premises' nurses have been competent	.055	−.036	**.679**	−.005	−.006	−.057	.194
Item 61. I'm overall satisfied about education's quality	.108	.074	**.634**	.083	−.260	−.068	−.042
Item 55. The clinical premises' nurses involved me in their work	−.025	−.111	**.593**	−.072	.246	−.028	−.028
Item 58. The nurses on duty in clinical training premises were aware of student's learning objectives	.039	.037	**.572**	−.022	−.133	.026	−.005
Item 10. Clinical training was well executed	−.175	.027	**.567**	.015	.270	.010	−.017
Item 27. I have been well received to clinical premises	.111	.152	**.395**	.136	−.172	.052	.094
Item 59. Tutors ensured clinical training supervision	.130	.143	**.371**	.111	.048	.067	.163
Item 26. Preliminary education to clinical activities was satisfactory	.143	.110	**.310**	.152	.192	−.066	−.125
Item 56. The nursing documentation available at clinical premises was appropriate	.003	.193	.017	**.563**	−.083	−.032	.052
Item 23. I'm overall satisfied about how this academic year went	.086	.104	−.186	**.542**	−.075	−.003	.074
Item 34. The examination's methods have been clearly defined	.085	.265	−.018	**.404**	.072	.021	−.027
Item 6. Theoretical courses with their training and exams allowed an optimal path in studies	.086	.017	.028	**.402**	.081	.008	−.010
Item 35. Exams adequately evaluated student's knowledge	.225	.006	.123	**.398**	−.010	.040	−.069
Item 33. Teaching aids (indicated or provided) were appropriate for the study of each discipline	.080	.304	−.130	**.389**	.034	.015	−.011
Item 3. The time between classroom activities and other activities was well distributed	−.015	.340	.029	**.377**	−.100	.099	−.011
Item 2. Lectures' schedule was well organized	.240	.050	−.108	**.365**	.032	−.107	−.007
Item 31. Teaching plan complied with propaedeutic criteria between disciplines	.151	−.011	.021	**.349**	.135	.017	.058
Item 37. Teachers were on time and regularly present for lectures	.219	−.065	.080	**.333**	.062	−.005	−.123
Item 38. Teachers provided a teaching plan for their discipline to the students	.211	.004	−.004	**.329**	.136	.009	−.079
Item 1. The total study load has been acceptable	.250	.061	.029	**.309**	.106	.043	.003
Item 36. My exams' results reflected my actual knowledge	−.074	.188	−.073	**.296**	.231	.138	.030
Item 11. There was an adequate correspondence between acquired theoretical knowledge and clinical training's objectives	−.058	.145	.273	**.277**	.212	−.079	−.069
Item 4. At the beginning of the course I received sufficient information about the program and its educational objectives	.204	.130	−.076	**.275**	.138	.008	.067
Item 32. The hours assigned to the disciplines were sufficient for teachers to complete their program	.106	−.134	−.084	.051	**.677**	−.120	.294
Item 30. The several disciplines' contents did not overlap	.178	−.045	−.069	−.020	**.626**	−.052	.245
Item 24. The topics treated in the different disciplines were interesting	.143	−.063	−.045	.044	**.560**	−.093	.303
Item 28. The disciplines that I studied were interesting	.108	.150	−.056	.194	**.387**	−.027	−.020
Item 29. The disciplines that I studied were pertaining to the course's educational objectives	.080	.250	.011	.226	**.264**	.124	.033
Item 5. Theoretic didactic was well executed	.240	.014	−.031	.233	**.255**	.040	−.024
Item 20. The information given to the students by the registrar's office have been clear and correct	−.014	−.097	−.007	.040	−.087	**.879**	.024
Item 19. Registrar's office staff was kind and helpful	.003	.006	−.010	−.027	−.084	**.862**	.051
Item 18. Registrar's office services were well organized	.051	.023	−.016	−.030	−.044	**.806**	.010
Item 64. I would suggest to enroll to the Bachelor in Nursing Science to other people	−.027	.088	.047	−.054	.217	.062	**.712**
Item 63. If I could go back in time I would still enroll to the Bachelor in Nursing Science	−.030	.122	.043	.020	.193	.026	**.703**
Item 62. Once I obtain my nursing degree I plan to achieve other academic titles in this field	−.090	−.085	.159	.068	.187	.029	**.401**

Extraction method: principal axis factoring.
Rotation method: promax with Kaiser normalization. Boldface identifies the primary factor on which the item loads.

Table 3
Internal consistency of the QBN 2.

Factors	Cronbach's alpha	No. of items
1) Quality of teachers	0.94	18
2) Quality of services and support organization	0.88	11
3) Quality of clinical training	0.86	10
4) Didactic organization and quality of evaluation	0.89	16
5) Interests and objectives	0.77	4
6) Quality of administrative services	0.86	3
7) Identity and belongings	0.76	3
Scale total	0.96	65

Discussion

Some items loading to more than one dimension created some slight problems to the tool's structure. The dimension's internal consistency emerged by principal axis factoring through reliability analysis for each dimension, reliability coefficients (Cronbach α) were as follows (Table 3): 0.9 for first dimension "teachers' quality", 0.8 for second dimension "services and support organization's quality", 0.8 for third dimension "clinical training's quality", 0.8 for fourth dimension "didactic organization and evaluation's quality", 0.7 for the fifth dimension "interests and objectives", 0.8 for the sixth "administrative services' quality", and 0.7 for the seventh "identity and belongings". The results showed high scores in all domains since all the Cronbach α values were ranging from 0.70 to 0.94, in addition, the tool's reliability coefficient was 0.96. Based on an analysis of 650 student evaluation and also with expert panel advice, the SQEBDN 2 demonstrated strong internal consistency both within domains and as a tool overall. From construct validation emerged through factor analysis, a Bachelor of Nursing Science Degree Course quality model could be outlined, however, more studies are needed to evaluate the kind of relationship between these dimensions. Some item loadings were below the cut-off point of .30 but they were retained because their content was considered important from the research team for evaluation.

From construct validation emerged education's quality domains not similar to the ones described in international literature, this emphasizes how much cultural differences can influence the results and how it is necessary to develop specific and context related tools. Furthermore, other studies are necessary to improve the developed tool, the Bachelor of Nursing Science Degree's quality could be differently conceptualized so the items could be different from the assessed ones. Education's quality is a wide and multifaceted concept: the work could be improved by the participation of other disciplines' experts in education's quality to the research group. The SQEBDN 2 is a prismatic tool which can be considered valid and reliable to investigate different basic nursing education's quality domains. The unsatisfactory test–retest reliability of quality of teachers, quality of services and support organization, interests and objectives, quality of administrative services, and identity and belongings, might be explained by a low sample size (25 subjects) used for re-test (Table 4).

Table 4
Test retest reliability of the SQEBDN 2.

	ICC	CI 95%	p
1) Quality of teachers	0.65	0.19–0.85	0.007
2) Quality of services and support organization	0.63	0.17–0.85	0.005
3) Quality of clinical training	0.79	0.51–0.91	0.000
4) Didactic organization and quality of evaluation	0.76	0.45–0.90	0.001
5) Interests and objectives	0.57	0.01–0.81	0.002
6) Quality of administrative services	0.34	−0.52–0.74	0.16
7) Identity and belongings	0.59	0.25–0.80	0.001

Limitations

The first limitation of this study was the enrollment of a convenience sample even though it was comparable to the national situation. The limitation to the present study includes the fact that the tool was administered only to students who are regularly attending classes, missing the opinions of the out of course students (not regularly attending classes) who are representing a wider population. Furthermore the out of course students' choice can itself be a consequence of dissatisfaction towards teachers, didactic organization of Bachelor of Nursing Science Degree Courses or towards teaching and evaluating methods. In addition, other limitations are due to real students' opinion in the questionnaire filling because their point of view on a course's quality could be influenced by several factors. These include their real capability to appreciate and judge didactic activities "on the spot", or how much their effective interest for the discipline could influence their expressed opinions. Finally, in future studies the qualitative data of students', teachers' and clinical instructors' perceptions would be a useful addition.

Conclusions

The SQEBDN 2 is a tool that can be used to evaluate students' perceived quality of the Bachelor Degree in Nursing Science and consequently can be used to improve their educational level. This tool could be useful to determine changes in the nursing complex environment, where the research of students, nurse teachers' satisfaction (Gui et al., part II, 2009) and staff's organizational well-being can and has to find new ways of achievement and has to be constantly monitored. More in details, this instrument can be used to evaluate and monitor several dimensions of student satisfaction and consequently may allow specific interventions. For example, by administering the SQEBDN 2 nursing schools can evaluate and monitor teachers' quality or administrative services' quality and eventually make changes. Users of the SQEBDN 2 can compute both not only a total score to evaluate the global quality of the Bachelor Degree but also a score for each individual factor. Because the factors have different numbers of items, to make each factor score and the total scale score comparable we recommend the use of a standardized score from 0 to 100 with higher score meaning better quality. In Appendix A the name and the e-mail of the investigator are reported. The user can contact him for permission to use the SQEBDN 2 and to have the SPPS syntax for the scoring procedures. More studies with larger samples of students in different settings are needed, therefore, a qualitative phase would be useful to investigate and comprehend the expectations and the experiences that, in this first research step, remained obscure.

Author Contributions

Conception and design of the study: LM, EV.
Acquisition of data: LDS.
Analysis and interpretation of data: GS, MGDM, GR, EV.
Drafting the article: LM, GS.
Critical revise: EV.
Final approval of the version to be submitted: RA.

Fundings and Conflict of Interest

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Appendix A

Permission to use the QBN should be sent to Dr. Ercole Vellone, e-mail: ercole.vellone@uniroma2.it.

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