A cross-sectional study of emotional intelligence in baccalaureate nursing students

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SUMMARY

Emotional intelligence (EI) has been identified as a set of competencies necessary for workplace success. EI is deemed essential for effective nursing practice, yet little research has been done in nursing. The purpose of this study was to describe the EI scores of baccalaureate nursing students and to determine if there was a difference among the students across the four years of the program. A cross-sectional design was used to examine the EI scores of 100 female nursing students (25 in each of the four years). Students completed the BarOn Emotional Quotient Inventory Short (EQ-i:S), a 51-item self-report questionnaire that includes scores for a total EQ and 5 subscales.

Undergraduate nursing students in each of the four years of the program had EI scores within the emotionally and socially effective functioning capacity, identifying them as being able to establish satisfying interpersonal relationships, and work well under pressure. The difference in total EQ scores between students in Year 1 and Year 4 was statistically significant (p < 0.05) as were the scores in the interpersonal and the stress management subscales (p < 0.05) with students in Year 4 scoring higher than those in Year 1. Implications for nursing education are discussed.

INTRODUCTION

Bar-On (2005) describes emotional–social intelligence (ESI) as an aggregate “of interrelated emotional and social competencies, skills and facilitators that determine how effectively we understand and express ourselves, understand others and relate to them, and cope with daily demands”(p. 3). These emotional intelligence (EI) skills and competencies are deemed necessary for workplace success, job performance, and effective leadership (Bar-On, 2006). The attributes of EI are valued in professional nursing and claimed to be important for effective nursing leadership (Herbert and Edgar, 2004; Vitello-Cicciu, 2002). Yet there are few studies of EI among health professionals, including nurses and nursing students, to support this claim. This study begins to address an understanding of EI in undergraduate nursing students that is a necessary first step in determining the need to incorporate EI as an integral component of nursing education.

BACKGROUND/LITERATURE

Traditionally the intelligent quotient (IQ) score, a measure of cognitive skills and mental abilities, was used alone or together with grades and college entrance tests as the prime measure of one's intelligence and as a predictor of the likelihood of academic and career success including job performance (Bar-On et al., 2007). However, intelligence test scores alone do not predict the likelihood of life successes, or how well individuals perform on the job (Bar-On 2006; Goleman, 1998). Research over the last 20 years has shown that, in addition to traditional IQ, an aggregate of social–emotional abilities and competencies also appear to influence the tasks, demands, and judgments of everyday life. These are reported to be necessary for individual effective functioning and have the potential for home, school and workplace success (Bar-On, 2006; Goleman, 1998; Mayer and Cobb, 2000). The term emotional intelligence and more recently emotional–social intelligence (ESI), was coined to encompass the set of skills and competencies that involves the ability to use emotions and emotional information to assist reasoning (Bar-On, 2006; Mayer et al., 2008).

EI has been defined in a variety of ways, with much overlap in the most widely recognized descriptions (Bar-On, 2006; Goleman, 1998; Mayer and Salovey, 1997). Goleman (1998) defines EI as “the capacity for recognizing our own feelings and those of others, for motivating ourselves, and for managing emotions well in ourselves and in our relationships” and maintains that it is a “learned capability. . .that determines our potential for learning the practical skills” (p. 317). His EI framework encompasses five elements: self-awareness, motivation, self-regulation, empathy, and social skills. Similarly, Bar-On (2006) describes emotional intelligence...
as having both emotional and social components and “using that intelligence to manage personal, social and environmental change by realistically and flexibly coping with the immediate situation, solving problems and making decisions” (p.14). Mayer and Salovey (1997) conceptualize EI as a mental abilities model in which one can validly reason with emotions and use them to enhance thought. This model is a four-step related abilities hierarchy encompassing the ability to correctly perceive, use, understand, and manage emotions.

In summary, EI is a type of intelligence that involves the ability to be sensitive to one’s own feelings and those of others, to be in control of self, to motivate one’s self and influence others, to manage emotions effectively, and can be developed to promote emotional, intellectual, and professional growth (Bar-On, 2006; Carrochi et al., 2000; Mayer et al., 2001). The attributes of EI are important for overall well-being and influence our ability to succeed in life. Together with cognitive intelligence, emotional intelligence forms an important part of general intelligence; it develops over time, changes throughout life, and can be improved through training as well as therapeutic techniques (Bar-On et al., 2007; Goleman, 1998; Page and Page, 2003).

The attributes encompassed under the EI construct are integral to professional nursing. Nursing values caring and nurturing its members to gain knowledge of self including intrapersonal and interpersonal skills, to manage emotions, and to develop empathic and therapeutic nurse–client relationships. Nurses have long fostered supportive and positive collaborative work environments and have used EI attributes in their interactions with peers, colleagues, and clients (Cadman and Brewer, 2001; McQueen, 2004). EI also has significance for the development of nursing leaders to deal with the ever-changing landscape of healthcare and to stem the tide of burnout among professional nurses (Cummings et al., 2005; Goleman, 1998; Page and Page, 2003).

Yet there has been relatively little research done regarding EI among health professionals, nurses, and particularly nursing students. Some studies have explored the relationship between EI and professional success. Typically, the higher the level of EI, the greater the person’s emotional and social functioning, organizational effectiveness, and capacity to self-actualize and succeed professionally (Bar-On, 2002; Carrochi et al., 2000). Several studies have shown evidence of a positive association between EI and nursing practice. Codier and associates (2008) measured EI in clinical staff nurses; positive correlations were found between EI and both performance level and higher organizational commitment. The authors suggested that the development of EI earlier in nursing education may enhance performance in future practice. Other studies involving nurses have considered the relationship between emotions and stress. Humpel et al. (2001) explored EI in mental health nurses and found no relationship between emotional competence and experienced emotions. Cummings et al. (2005) surveyed the impact of hospital restructuring on staff nurses’ physical and emotional health and whether it was mitigated by type of leadership style (as reflected through EI). Their findings revealed that nurses working for resonant (high EI) leaders (as opposed to dissonant low EI emotionally out of touch leaders) experienced better emotional and physical health and more job satisfaction. Montes-Berengue and Augusto (2007) explored the role of perceived emotional intelligence, social support and coping and mental health of nursing students. Students with higher emotional clarity scores (had a clear perception of their stress) used less time focusing on their emotional reactions and sought out appropriate resources, strategies, and support to address their distress. Their results supported the hypothesis that EI is a skill that is important in coping with negative stress within nursing.

Evans and Allen (2002) acknowledge the need for nurses to manage their emotions and understand those of their patients, but note that EI has not been incorporated into nursing curricula. Freshwater and Stickley (2004) would go so far as to say that EI “is at the heart of learning to care” and needs to be placed at the core of the nursing curriculum (p. 96). While emotionally intelligent persons have been described as “likely to have qualities that are highly valued in professional nursing” (Brewer and Cadman, 2000, p. 264), there is little research in nursing to support this claim. The lack of evidence emphasizes the need to explore EI in nursing students. In turn, this would assist nurse educators to understand and potentially facilitate the development of a high level of EI among nursing students (Freshwater and Stickley, 2004; McQueen, 2004; Rochester et al., 2005). By recognizing the importance of EI as a prerequisite for effective nursing leadership, competent nursing practice and quality clinical nursing outcomes, and by developing these skills in the future nursing workforce, we may ultimately improve the nursing profession’s capacity to respond to both anticipated and unforeseen challenges in the future of healthcare (Bellack et al., 2001; Brewer and Cadman, 2000; Vitello-Cicciu, 2002). This study exploring EI in baccalaureate nursing students is a necessary first step.

**Research questions**

1. What are the EI scores of baccalaureate nursing students?
2. Is there a difference in EI scores among baccalaureate nursing students across the four years of the program?

**Method**

**Design and sample**

A cross-sectional survey design was used because it was “appropriate for describing the status of phenomena or relationships among phenomena at a fixed point,” which was the purpose of this descriptive study (Loiselle et al., 2007, p. 190). The convenience sample consisted of 100 female nursing students with 25 from each of the four years in a problem-based, small group and self-directed baccalaureate nursing program. Females only were included for two reasons: (a) males and females score differently on the Emotional Quotient instrument, and the standardized scores are based on gender-specific norms (Bar-On, 2002); and (b) males constitute a small proportion of the baccalaureate student nursing group and there was not a sufficiently large enough sample to compare gender differences in this study. In anticipation of a difference between groups (years) of 15 or more on the standard scores of the BarOn Emotional Quotient Inventory: Short (EQ-i:S), with a beta of 0.8 and alpha of 0.05, the sample size required per year was 23, for a total sample size of 92.

**Instrument**

The BarOn Emotional Quotient Inventory: Short (EQ-i:S) is a self-report measure of emotional intelligence (Bar-On 2002). The EQ-i:S contains 51-items in the form of short questions rated on a five-point Likert scale from 1 - “very seldom or not true of me” to 5 - “very often or true of me” and takes approximately 15 min to complete. The EQ-i:S generates scores for total EQ and 5 sub-scales, which make up the total EQ and include intrapersonal,
interpersonal, stress management, adaptability and general mood. The EQ-i:S also has a built-in correction factor, which reduces the effects of response bias and increases the accuracy of the results (Bar-On, 2005). Based on age and gender, raw scores are tabulated and converted into standard scores based on a mean of 100 and a standard deviation of 15.

General interpretive guidelines for standard scores are presented in Table 1. The EQ-i:S has good psychometric properties with an internal consistency of .97 and test retest of .72 for males and .80 for females for the total EQ (Bar-On, 2005). Numerous international studies provide support for both construct and predictive validity (Bar-On, 2005). The BarOn EQ-i:S was selected for a number of reasons: (a) it encompassed more of the EI skills and competencies that are relevant to professional nursing than other instruments reviewed; (b) it has been widely tested with robust evidence supporting its theoretical basis, with sound validity and reliability data (Bar-On, 2002, 2006); and (c) it can be administered as a self-report instrument.

Data collection

Students were randomly selected from class lists in each of the four years of the BScN program. They were sent a letter of introduction to the study by email, invited to participate and asked for a reply within two weeks. If students did not agree to participate or did not respond after a third attempt to contact them, new names were randomly selected from the class lists until the required sample was obtained.

Students who agreed to participate completed the EQ-i:S in a quiet private office and then returned it in an envelope to the research assistant. As an incentive, students who agreed to participate were entered into a draw to receive a $100.00 gift certificate at the University Bookstore. Attached to each survey was a piece of paper that students completed with their name and contact information which was deposited in a ballot box for the draw.

Data analysis

The data for each group was summarized using descriptive measures expressed as mean and standard deviation (for total score and scores on each subscale of the EQ-i:S). To test for the differences between the four independent groups, Analysis of Variance with alpha set at 0.05 was used. A linear analysis was conducted to assess for linearity of the relationship between year of the program and EQ scores. Data analysis was conducted using SPSS v14.

Ethical considerations

Ethics approval was obtained from the McMaster University Research Ethics Board. The letter sent to the students outlined the purposes and methods of the study, the risks and benefits, that their participation was entirely voluntary, they could withdraw consent at any time, drop out of the study, or choose not to answer any of the questions, and that any of these actions would not have any effect on their performance in their program. None of the investigators were instructors of the students.

Participants were also informed about confidentiality of data, that their names would not be included on the questionnaire but that a code number would be assigned to each participant. The coding allowed the research assistant to track completed questionnaires and to arrange participant appointments for questionnaire completion.

Results

Participants included 25 female nursing students from each year of the BScN program; their ages ranged from 17 to 48 years with a mean age of 21.2 years; most (93%) were 22 years or younger. The mean total EQ standardized scores for the nursing students by year of the program were 98.0 (Year 1), 103.72 (Year 2), 104.56 (Year 3) and 107.80 (Year 4) (Table 2), all representing Effective or Average emotional and social capacity (Table 1). Overall mean interpersonal scores (111.52) for students in Year 4 were in the enhanced skill category (Table 2). The difference in total EQ scores between students in Year 1 and Year 4 was statistically significant (p < 0.05) with students in Year 4 scoring higher than students in Year 1 (Table 3). There were also statistically significant differences noted between students in Years 1 and 4 on two subscales, interpersonal and stress management (Table 3) with students in Year 4 having higher scores than students in Year 1.

There was a statistically significant positive linear association (p < 0.05) between years of the program and the higher categories of EI functioning (Table 4). That is, in the upper years of the program, a greater percentage of the students were more likely to have effective and enhanced EI skills. In Year 4, 24% of the students were at an enhanced level of EI functioning or well-developed emotional and social capacity.

Discussion

In describing the EI scores of baccalaureate nursing students, it was apparent that the majority of students across all four years in our study scored within the Effective or Average Functioning category of the General interpretive guidelines for EQ-i:S standard scores (Table 1) indicating that they have an adequate emotional and social capacity and are generally emotionally and socially effective in dealing with daily demands. Yet in keeping with the postulations of Strickland (2001) and Freshwater and Stickley (2004), is an Effective or Average EI functioning sufficient for a nurse to meet the proposed workplace challenges that are current in today’s healthcare context? Over the last 10 years there have been consistent demands for strong, emotionally intelligent and effective nurse leaders to meet the challenges in today’s health care system, to buffer the stresses, develop resiliency among staff, and prevent burnout and staff loss (Akerjordet and Severinsson 2008; Bellack et al, 2001; Herbert and Edgar, 2004). Rochester et al. (2005) interviewed nurse graduates of 2–6 years, identified as high performers by their nursing unit managers; the purpose of the study was to identify capabilities that were perceived as most important for successful nursing practice. A range of emotional intelligence capabilities were identified by both graduate nurses and their unit managers as being significant factors for successful practice. Interpersonal skills, described as “the ability to

Table 1
General interpretive guidelines for BarOn EQ-i:S standard scores.

<table>
<thead>
<tr>
<th>Range of scores</th>
<th>Guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td>110–119: Enhanced</td>
<td>High – well-developed emotional and social capacity</td>
</tr>
<tr>
<td>90–109: Effective</td>
<td>Average – adequate emotional and social capacity</td>
</tr>
<tr>
<td>80–89: Needs enrichment</td>
<td>Low – underdeveloped emotional and social capacity, with room for improvement</td>
</tr>
</tbody>
</table>
Statistically significant linear association found

Year 4  0  76  24
Year 3  0  80  20
Year 2  0  84  16
Year 1  28  56  16

Year of program  Percentage of students with standardized total emotional quotient scores in each category

Table 4

Table 3

Table 4

and across complex organizational and institutional boundaries, and to communicate, negotiate, and facilitate change within an organization (Bellack et al., 2001).

While EI scores were higher among students in each successive year of the program (Table 2), it remains unknown whether this is related to developmental growth, clinical experience, other life experiences or the small group, problem-based educational program, as the cross-sectional design prohibits such conclusions. EI skills can be enhanced through increased interaction with peers, and clinical role experimentation and a program that emphasizes therapeutic interaction and communication skills, self-assessment and reflective practice (McQueen, 2004). One might expect differences in the interpersonal and stress management subscals to stem from the impact of such an educational program.

In this study, a higher percentage of students in each successive year scored at an enhanced level of EI functioning (Table 4). What implications might this have for a nursing curriculum, particularly when EI competencies can be taught, learned and developed (Bar-On et al., 2007; Bellack et al., 2001; Page and Page, 2003)? Freshwater and Stickley (2004) contend that “when teachers pay little or no attention to emotional development, they fail to communicate with students the significance of human relationships” (p. 93). The results of this study imply that “paying attention to emotional development” would be important for a considerable number of students. A curriculum that has emotional intelligence at its heart would include, for example, reflective experiences, mentorship, modeling, creativity in the arts and humanities, developing self-awareness, empathy, relationships, forum theatre, journaling, exercise and talking (Freshwater and Stickley, 2004).

Limitations

One of the study limitations involved the cross-sectional design. While this design can establish association, it cannot determine causation (Streiner and Norman, 1998), or permit the conclusion that EI scores increase over the four years of the program. This design was chosen to develop an initial description of the EI scores in nursing students before beginning a longitudinal study that would be more complex in design and more expensive to conduct. A further study limitation was the small convenience sample of young females. Bar-On (2002) differentiates standard scores for both gen-

Table 2

Mean and standard deviation of standardized scores on total EQ and EQ subcales by year.

<table>
<thead>
<tr>
<th>Scale</th>
<th>Mean (standard deviation) of standardized scores by year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Year one</td>
</tr>
<tr>
<td>Total emotional quotient</td>
<td>98.00(14.39)</td>
</tr>
<tr>
<td>Intrapersonal scale</td>
<td>97.44(15.03)</td>
</tr>
<tr>
<td>Interpersonal scale</td>
<td>103.20(12.76)</td>
</tr>
<tr>
<td>Stress management scale</td>
<td>97.36(18.09)</td>
</tr>
<tr>
<td>Adaptability scale</td>
<td>96.08(16.75)</td>
</tr>
<tr>
<td>General mood scale</td>
<td>98.84(13.56)</td>
</tr>
<tr>
<td>Positive impress scale</td>
<td>108.12(12.79)</td>
</tr>
</tbody>
</table>

Table 3

Comparison of BarOn EQ-i:S standardized scores in year one and year four students.

<table>
<thead>
<tr>
<th>Scales and subcales</th>
<th>Mean standardized scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Year one</td>
</tr>
<tr>
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</tr>
<tr>
<td>General mood scale</td>
<td>98.84</td>
</tr>
</tbody>
</table>

Note: NS = not significant.

Students in each Level of the program had higher Total EI scores than students in the prior year with the highest scores occurring in Level 4 students, suggesting that EI capacity may develop over time (Bar-On, 2002). In year 4, 24% of students had enhanced skills in total EI Functioning, that is, well-developed emotional and social capacity as compared to students in the prior three years, with 28% of students in Year 1 having standard scores within the “Needs Enrichment” range, or a low or underdeveloped emotional and social capacity (Table 4). While students in Year 4 had the highest scores of effective EI functioning (85–115) on all EI subscales as compared to prior year students (Table 2), the difference was statistically significant (p = .05) for only Total EI, and for the interpersonal and stress management EI subscales (Table 3). Effective functioning on the interpersonal subscale is indicative of satisfactory interpersonal and working relationships and being capable of working effectively in a team environment. Effective or Average functioning on the stress management subscale indicates a capacity to handle stress situations and to cope with a moderate level of adversity. However, the emotional work that is involved for nurses working in stressful environments can have a cost in the form of professional burnout (McQueen, 2004; Vitello-Cicciu, 2002). Nursing leaders who advocate for the inclusion of EI in nursing curricula recognize the need for students to address both the personal and social competencies to enable them to work effectively within empathise and to work productively with people from a broad range of backgrounds, a willingness to listen to different points of view before coming to a decision, and an ability to develop and use networks of colleagues to help solve key workplace problems,” were ranked highest on importance (p. 183).

While EI scores were higher among students in each successive year of the program (Table 2), it remains unknown whether this is related to developmental growth, clinical experience, other life experiences or the small group, problem-based educational program, as the cross-sectional design prohibits such conclusions. EI skills can be enhanced through increased interaction with peers, and clinical role experimentation and a program that emphasizes therapeutic interaction and communication skills, self-assessment and reflective practice (McQueen, 2004). One might expect differences in the interpersonal and stress management subscals to stem from the impact of such an educational program.

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One of the study limitations involved the cross-sectional design. While this design can establish association, it cannot determine causation (Streiner and Norman, 1998), or permit the conclusion that EI scores increase over the four years of the program. This design was chosen to develop an initial description of the EI scores in nursing students before beginning a longitudinal study that would be more complex in design and more expensive to conduct. A further study limitation was the small convenience sample of young females. Bar-On (2002) differentiates standard scores for both gen-

Table 4

Percentage of students by year with standardized total emotional quotient scores in each category of functioning.

<table>
<thead>
<tr>
<th>Year of program</th>
<th>Percentage of students with standardized total EQ scores in each category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Area for enrichment</td>
</tr>
<tr>
<td>Year 1</td>
<td>28</td>
</tr>
<tr>
<td>Year 2</td>
<td>0</td>
</tr>
<tr>
<td>Year 3</td>
<td>0</td>
</tr>
<tr>
<td>Year 4</td>
<td>0</td>
</tr>
</tbody>
</table>

Statistically significant linear association found p < .05.
nder and age. Consequently both older nurses and male nurses should be included in future studies. Finally, because the BarOn EQ-i:S is a self-report instrument, it has limitations associated with similar measures such as validity and accuracy of self-report data (Loiselle et al., 2007). The EI concept itself may be a limitation in that it is broad and hard to operationalize and critics suggest that there is insufficient study of EI to establish its efficacy (Landy, 2005; Mayer et al., 2008; Zeidner et al., 2008).

Conclusions

This study described and compared the EI scores of baccalaureate nursing students indicating that this cross section of nursing students have an adequate and effective capacity for social and emotional functioning. In recognizing the importance of EI as a prerequisite for effective nursing leadership, competent nursing practice and quality clinical outcomes, these results offer preliminary support that "undergraduate nursing education must provide a learning environment that emphasizes the importance of emotional intelligence by nurturing and facilitating the development of these qualities" (Rochester et al., 2005, p. 187). As teachers we have a responsibility to students, to potential employees, and to the public to prepare nurses for the social and emotional demands of their roles (McQueen, 2004) so they are better able to deal with others confidently, competently, and safely (Evans and Allen, 2002).

Further research is needed to examine changes in student EI scores over the course of the program (longitudinal studies) and to compare BScN students with students in other programs (health professional and non health professional) to determine EI differences in those who enroll in health professional studies. In addition, it is useful to assess the relationship of EI with other variables such as leadership and caring. In follow-up to this preliminary cross-sectional study, we are currently conducting such a four year longitudinal study of EI among nursing and other health sciences students throughout their educational program. This design will permit comparison of EI scores between health professional student groups and assessment of EI changes over time. Selected students will be provided with feedback related to individual EI scores along with suggested strategies as how to improve EI scores in order to determine the impact of such an intervention. Results from this cross-sectional study have provided us with important baseline data on which to design the longitudinal study. It is only through further research that the influence of EI in nursing and nursing education can ultimately be ascertained.

Acknowledgement

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