Nursing shortage is a global challenge. National Health Profile 2017 reports that India has 1.9 million nurses i.e. 143 nurses per lakh population, indicating a human resource shortage in health care industry. Every organisation employing newly graduated nurses are apprehensive about their competencies and readiness for clinical practice. Competence of graduating nursing students is related to patient safety.

New nursing graduates lack competence in communication, leadership, organisation, critical thinking, specific situations and stress management (Eisen & Sandau, 2013). Nursing supervisors are often unsatisfied with the clinical skills of their new staff and often incriminate the nursing educators for the preparation-practice gap of nursing graduates. Brown & Crookes (2016) reported that more than half of the senior nurses did not believe that new graduates could practice independently in 18 of the 30 skill areas. There were only four skill areas that more than two-third of the respondents believe the new graduate could operate independently.

The undergraduate nursing curriculum provides clearly stated learning outcomes a graduate should possess in the theoretical and practical areas. Though, a wide range of clinical skills are listed in the curriculum, limited facilities, low student faculty ratio, restricted time to expose students to skill learning may be the hindering factors for skill training and presents preparation–practice gap as a challenge for the nursing educators.

Today with technological support, education is delivered using various approaches. Competency-based training, a ‘learning by doing’ approach is used to achieve learning outcomes in higher education institutions. It focuses on the specific knowledge, attitudes, and skills needed to carry out the procedure or activity. The assessments in competency-based education (CBE) approach ensure that graduates have the essential knowledge, skills, and attitude to function well in entry-level positions. Studies show that competency-based teaching and assessment programme allows for rapid improvement in the clinical skills of students. Stillman et al (1997) justified that implementation and evaluation of new competency-based curriculum at a medical school in China for one year showed students significantly outperform their counterparts as well as senior level students tested the previous year. Many studies have acknowledged that nursing graduates have insufficient competencies to provide high quality services at the beginning of work (Bratt, 2009; Newton & McKenna, 2007).

A need-based analysis is a structured process of collecting and analysing information that can influence the decision to initiate a new programme or revise an existing one (Keating 2011). Based on the findings, the investigator developed a competency-based clinical skills teaching and assessment programme for undergraduate nursing students.

**Objectives**

The study was carried with the objectives to (1) determine the clinical competencies of upcoming baccalaureate nursing graduates, and (2) develop a competency-based clinical skills teaching and assessment programme for undergraduate nursing students.

**Assumption:** Gap exists between nursing education and clinical skills learning of students.

**Theoretical framework:** The study was based on Miller’s pyramid for assessment (1990) model that provides a framework for assessing clinical competence in nursing education and assist teachers in matching learning outcomes (clinical competencies) with expectations of what the learner should be able to do at any stage.

**Review of Literature**

Cheng et al (2014) assessed the effectiveness of a pre-graduation clinical training programme for nursing students before graduation on students’ self-perceived clinical competence and clinical stress among 198 students. Results showed that post-test clinical competence was significantly higher than pre-test competence, positively related to clinical competence at 3 and 12 months, and negatively related to clinical stress at 3 months.

Bennett (2017) stated that a gap existed between nursing education and clinical skills; 55 percent of graduate nurses felt their education prepared them to work independently after graduation; 64 percent felt they had enough “hands on” experience in school, 94 percent felt a preceptorship programme should be included in nursing school to gain experience.

**Materials & Methods**

A longitudinal descriptive study design was adopted. It was approved by the institutional ethics committee. A total of 72 baccalaureate students in final year of 4-year BSc...
The CCQ consisted of 47 items that represent competencies categorised under nursing professional behaviours (Items 1-15) or skills (Items 16-47). The scale’s item response scores ranged from 1 (do not have a clue) to 5 (know in theory, competent in practice without any supervision). Total scores range from 47 to 235, with higher scores indicating a higher level of competence. The CCQ evaluates nursing competence: safe care, professional ethics, assessment, critical thinking, collaboration and communication, basic nursing routines, and technical skills as required at entry-level. Besides the standardised tool, students answered five questions that were utilised to explore two items in depth (a) reasons associated with students’ feeling of incompetency to work in clinical area and (b) strategies that help students to attain satisfaction in skill learning.

**Competency-based clinical programme:** The programme was designed to bridge the gap between student and professional nurse roles and implemented for the first time at our institution. A nursing education unit was created to streamline, monitor, implement and evaluate the programme activities. The list of procedures in the log book based on Indian Nursing Council regulations became the guide for development of clinical competencies. Lesson plans, performance checklists, and written and videotape training materials were developed. Clinical instructors were appointed in each ward of posting. A 10-day training programme was conducted for clinical instructors to implement competency-based skill training in a systematic manner. Integration of nursing education and service was initiated to involve nursing service personnel along with the faculty in the teaching learning process. The faculty-student ratio was strengthened to 1:7. During clinical training the faculty served as mentors, facilitating student nurses’ clinical learning and acting as a coordinator between the school and the clinical facilities. Online feedbacks were collected from students using survey monkey at the end of clinical posting. Feedbacks provided opportunities for students to share experiences and served as a channel for communication between students, faculty, and clinical facilities.

Demographics indicated that students were aged between 20 to 23 years, 80.6 per cent were female and 75 per cent resided in the hostel. Table 1 indicates that the overall competency level of students was reduced in areas related to professional behaviours and advanced nursing skills. Table 2 shows the overall mean and SD of clinical competency skills of undergraduate students. Highest mean percentage competency score was for general skills (82.5%) and the lowest for advanced nursing skills (66.1%). The mean percentage competency score for professional behaviours and core nursing skills was 69.8 percent and 82.1 percent respectively.

Item wise analysis of clinical competence highlighted that under professional behaviours, students felt inadequacy in taking appropriate measures to prevent or minimise risk of injury to patients and in adhering to ethical and legal standards of practice. In relation to general skill competency, students had inadequacy in writing shift reports. Majority of students expressed low competency related to core nursing skills namely, performing urinary catheter insertion and care, using sterile techniques, giving enema, performing upper airway suctioning and tracheostomy care. Students grossly felt inadequacy in all areas of advanced nursing skills such as performing a venipuncture, blood transfusion, postural drainage and percussion, rendering pre- and post-operative care and also in providing chest tube care with underwater seal management.

About 62.5 percent students felt that they were fully competent to work in a clinical area, contradictorily 90.3 percent insisted on the need for effective clinical practice and exposure for skill perfection. An in-depth analysis of reasons associated with students’ feeling of incompetency to work in the clinical area showed (1) Inadequacy of skill learning/ training – (23%); (2) Fear

<table>
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<tr>
<th>Competency score</th>
<th>Professional behaviours</th>
<th>Skill competencies (general performance items)</th>
<th>Core Nursing skills</th>
<th>Advanced nursing skills</th>
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<tr>
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<th>Mean percentage</th>
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<td>Advanced nursing skills</td>
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<td>19.84</td>
<td>5.21</td>
<td>66.1</td>
</tr>
</tbody>
</table>

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**Table 1:** Assessment of clinical competency skills of outgoing undergraduate students (N= 72)

**Table 2:** Assessment of clinical competency skills of outgoing undergraduate students (N= 72)
or low confidence levels to care for patients individually – 13 (18%); (3) students not being accountable for patient care during study period – 5 (7%); (4) Inadequacy of knowledge in certain care areas – 15 (21%).

Strategies that students felt will help them to attain satisfaction in skill learning are: (a) Improve bedside teaching for students – 40 (56%); (b) Teachers should focus beyond the routine log book requirements (40%); (c) Improve quality of supervision for students in clinical areas - 38 (53%); (d) Improve IPR / communication skill with students – 33 (46%); (e) Individual attention/ concentration for students to be given - 23 (30%); (f) Students being given responsibility to care for patients – 5 (7%).

Discussion
Although the undergraduate nursing education curriculum prescribed by INC provides the minimum requirements for professional registration, yet the transition from being student nurse to a professional nurse is a challenge. This study shows that the students were highly competent with general and core nursing skills and comparatively less competent with professional behaviours and advanced nursing skills. Similar results were identified in a study by Kajander-Unkuri et al (2014) that showed the overall level of competence of graduating nursing to be good (66.7, VAS 0-100). The competence was highest in helping role and in diagnostic functions, being slightly lower in therapeutic interventions and work role. Another study by Lakanmaa et al (2014) identified that 69 percent nursing students’ self-rated their basic competence as good in intensive and critical care nursing.

Competency in both nursing education and practice is widely discussed today because the gap between the two areas continues to widen at all levels. Promoting development of a competency-based approach to curricula design for nursing and midwifery education programmes is important to bridge the gap between theory and practice in nursing education. Appropriate learning environment for competency assurance should involve the learner in assessment and accountability, provide practice-based learning opportunities, and individualise learning experiences.

Limitation: The generalisability of the study’s findings is limited because only students studying in the fourth year basic BSc nursing programme in one university were included as samples.

Implications & Recommendations
A system of integrated clinical practice may be implemented so that faculty can spend more time with the students in the ward. A preceptorship programme may be introduced during internship period for the upcoming graduates to increase their confidence level. Comprehensive orientation and continuing professional development programmes are needed to maintain and improve the competence and cooperation of nurse educators. The study recommends conduct of post-evaluation after implementation of the clinical competency programme.

Conclusion
The study indicates that gaps exist in the preparation of students particularly on advanced nursing skills. Teacher and supervisor assessments and knowledge-tests could be used alongside with self-assessments of competence to give a wider picture of student’s competence.

References
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