second year students. Qualitative data were analysed using the applied thematic analysis methodology.

Result Computer anxiety was significantly higher for first year students compared to second-year students ($t=4.08$, $p<0.001$). Lecturers also indicated barriers to using on-line technology for teaching.

Discussion Blended learning, a useful teaching strategy, has the potential to advance the OHN specialisation programme at DUT through the numerous opportunities for collaborative learning that the online technology affords. However, the challenges faced by both lecturers and students need to be addressed through focused interventions to ensure the optimal use of this teaching/learning strategy.

177 ADVANCING OCCUPATIONAL AND ENVIRONMENTAL HEALTH NURSING CONTINUING EDUCATION RESOURCES THROUGH TECHNOLOGY

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10.1136/oemed-2018-ICOHabstracts.1001

Introduction This presentation will demonstrate, highlight, and review AAOHN's global reach through technology and social media that provides 24 hour access to occupational and environmental health nursing standards of practice and continuing education resources.

Methods A retrospective literature and organisational review was conducted to determine *Global Health 2035* initiatives that occupational and environmental health nurses (OHNs) can use to demonstrate an impact through existing and projected future resources.

Result AAOHN, the premier association of OHNs, ensures continuing education resources not only for practice, but also for professional board certification. To accomplish this, there is one annual national conference along with a global summit offered every 3 years with the 5th global summit scheduled for 2020. Since 2016, a virtual conference option has been provided with on-line live-streaming. Online educational live/archived webinars and standards of practice are available free with membership or for a nominal fee. Through NIOSH grants and in conjunction with organisation expert collaboration, free respiratory protection program modules (3rd and 4th modules expected Fall 2017) are accessible at www.aaohn.org. AAOHN's journal, *Workplace Health and Safety*, provides research, case studies, and continuing education modules for purchase. Additionally, collaboration with other organisations advances OHN practice and has expanded current grant opportunities for further educational resources both in Hepatitis C and Infection Prevention and Control. Utilising these AAOHN resources, along with opportunities to share and publish current research, OHNs are prepared to offer and provide preventive services under new/changing health care systems to meet or exceed *Global Health 2035 initiatives*.

Conclusion AAOHN's innovative continuing education technology resources continue to provide OHNs with up-to-date tools for:

- preparing for professional board certification;
- ensuring that worker health and safety programs and services meet or exceed *Global Health 2035 initiatives*; and
- meeting future health care challenges.

1378 PERMANENT EDUCATION PRACTICE IN OCCUPACIONAL HEALTH: AN INTEGRATIVE REVIEW

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10.1136/oemed-2018-ICOHabstracts.1002

Introduction Permanent education in health has not the aim of training health professionals, but proposes to bring them together the team to build knowledge, valuing the concept of teaching-learning through a new policy proposal to improve work processes.

Objective To analyse experiences and strategies of continuing education about workers' health in scientific publications from the last ten years.

Method It is a literature integrative review, from 2006 to 2016, with search in Virtual Health Library and Scientific Electronic Library Online databases. All the six steps of methodology were developed: defining research question – *What strategies and experiences of permanent education for workers' health have been described in the literature?*; determining search strategy, with *Occupational health*, *Continuing education* and *Permanent education* as descriptors; categorising studies; reading papers to determine those containing results; discussion of the results; and presentation of the integrative review.

Results Eight articles were selected and analysed. After applying all steps of integrative review, data was classified in two categories: *Strategies of continuing education* and *Experiences of continuing education*.

Conclusion There is a lack of scientific and technical knowledge about Strategies of continuing education, being an important cause of difficulty to develop the work process, which is often aimed to collective strategies and always seeking the transmission of knowledge. About Experiences of continuing education, it's observed the development of guidelines directed to the ergonomic risks, with participation of workers.

466 ANALYSIS OF HEART RATE VARIABILITY DURING THE INHALATION OF A DIFFUSED AROMA

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10.1136/oemed-2018-ICOHabstracts.1003

Introduction Stress-related disorders, such as depression, psychosomatic disorders and anxiety neurosis, are common and increasing in the workplace. Aromas have ataractic and sedation effects on the parasympathetic nerves. They also affect the feelings of fatigue from stress by stimulating the central nervous system. The purpose of this study is to examine the effect of an olfactory stimulus on changes in a physiological index. Using aromas during the loading of stress, we measured beat-to-beat interval (R-R interval) times from electrocardiogram (ECG) recordings.

Methods The subjects in our study were 3 male medical university students (subjects' codes were A, B and C). After

assuming a relaxed seated position for 10 min, the subjects performed a mental arithmetic task for 60 min followed by relaxation for 30 min, and then a rest for 10 min. The mental arithmetic task is a method of adding numbers without using tools. Every subject performed both the control-load and aroma-load tests under the same protocol, while the ECG was measured. They smelled *lavandula angustifolia* during the aroma-load.

Result We analysed the power spectrum of high and low frequencies. The P1 (low frequency)/P2 (high frequency) was defined as the ratio of P1 to P2. There was no change in the P1/P2 of 2 out of 3 subjects by using the aroma. Subjects A and B could avoid mental stress by using the aroma during the mental arithmetic operation.

Discussion In an analysis of the power spectrum in the R-R interval times, the high and low frequencies in the physiological index of stress loading suggest that the aromas have an effect on the autonomic nervous system. As the strain on sympathetic nerve was relaxed, we conclude that the aroma affected the sympathetic nerves. Thus, we conclude that the aroma affected a sympathetic nerve, relaxing the strain on it.

391 QUANTIFYING COMPETENCIES OF OCCUPATIONAL HEALTH NURSES IN JAPAN

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10.1136/oemed-2018-ICOHabstracts.1004

Introduction Occupational health nurses can achieve high performance so that the competencies necessary for occupational health nursing practices are being acquired. The purpose of this study was to clarify how occupational health nurses are in possession of competencies required for occupational health nursing practices in Japan.

Methods An anonymous, self-administered questionnaire survey was conducted by mail. The questionnaires were distributed to 357 Japanese occupational health nurses and 211 were collected. (response rate, 56.3%). 21 of 211 were excluded because of incomplete responses and 190 were analysed. We asked the rate at which they possessed 40 competencies developed by Kono, *et al.* All competencies were rated on a 7-point Likert scale (1=Never, 7=Always). Data were collected between September 2016 and January 2017. We calculated descriptive statistics for all variables. As for the comparison of competencies' scores by years of experience as occupational health nurses, the Tukey HSD test was used. This study was approved by the ethical review board of Yokkaichi Nursing and Medical Care University.

Results The mean score of 8 competencies was more than 5.5 points. The mean score of 3 competencies was less than 4.5 points. All competencies' scores differed significantly by years of experience as occupational health nurses.

Discussion The competencies with high scores were common to nurses who had awareness of themselves as professionals, valuing human relations with clients, and supporting clients with respect. Therefore, we considered that these were competencies that were easy to acquire for occupational health nurses who learned nursing science. We also considered that some competencies might be low because nurses were not able to acquire them without opportunities for experience and activity.

562 DEVELOPMENT OF A GROUP/ORGANIZATION-FOCUSED DIAGNOSTIC SHEET FOR OCCUPATIONAL HEALTH NURSING

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10.1136/oemed-2018-ICOHabstracts.1005

Background Group/organization-focused quality nursing practices are expected of occupational health nurses, as the maintenance and promotion of the health of workers cannot be achieved without the wellbeing of the group/organisation in which they work.

Purpose In this research we developed a new sheet integrating diagnosis, outcome, and organisational support, in which the entire nursing process should be covered.

Methods Cases involving major workplace health issues were subject to discussion among members consisting of 3 nursing diagnosis researchers and 9 occupational health nursing specialists. During the discussion, Herdman Nursing Process, NANDA-I Nursing Diagnosis, and NIC-categorised Nursing Intervention were used for references.

Supervision by nursing diagnosis research specialists, advice from the special committee members of JAOHN, and opinions of nationwide working-group members were obtained.

Results The findings of the discussions, followed by qualitative analyses, were summarised for use in the sheet development.

Nursing Diagnosis				
Diffinition				
Defining Characteristics (Sign or symptom (Objective or subjective cue))	Related Factors (cause,contributing factor) ./Risk Factor (Determinant(increase risk))	Nursing Outcome		Opinion / Question
		↓Number of corresponding Defining Characteristics	Nursing support ↓Number of Nursing Outcome	

Abstract 562 Figure 1 Diagnostic sheet for occupational health nursing