



March 2014 - May 2014
Volume 31 Number 3

AJAN

australian journal of advanced nursing

An international peer reviewed journal of nursing
research and practice

IN THIS ISSUE

RESEARCH PAPERS

The predictors and outcome of
psychiatric disorders among
survivors post-earthquake:
survey from Sichuan, China

Association between CD4+ T-cell
count, atypical squamous cells
and Schiller's test in women with
HIV/AIDS

The effects of mindfulness
training program on reducing
stress and promoting well being
among nurses in critical care
units

SCHOLARLY PAPERS

Overseas qualified nurses in
Australia: reflecting on the issue

Health literacy, does it make a
difference

THE AUSTRALIAN JOURNAL OF ADVANCED NURSING

The Australian Journal of Advanced Nursing aims to provide a vehicle for nurses to publish original research and scholarly papers about all areas of nursing. Papers will develop, enhance, or critique nursing knowledge and provide practitioners, scholars and administrators with well-tested debate.

The AJAN will:

- publish original research on all nursing topics
- publish original scholarly articles on all nursing topics
- process manuscripts efficiently
- encourage evidence-based practice with the aim of increasing the quality of nursing care
- provide an environment to help authors to develop their research and writing skills
- provide an environment for nurses to participate in peer review

Publisher and Editorial Office

Australian Nursing and Midwifery Federation
PO Box 4239
Kingston ACT, Australia 2604
tel +61 2 6232 6533
fax +61 2 6232 6610
email: ajan@anmf.org.au
<http://www.ajan.com.au>

ISSN 1447-4328

Copyright

This journal is published in Australia and is fully copyrighted. All rights reserved. All material published in the Australian Journal of Advanced Nursing is the property of the Australian Nursing Federation and may not be reproduced, translated for reproduction or otherwise utilised without the permission of the publisher.

Indexing

The AJAN is indexed in the CINAHL (Cumulative Index to Nursing and Allied Health Literature) Database, Current Contents, International Nursing Index, UnCover, University Microfilms, British Nursing Index, Medline, Australasian Medical Index and TOC Premier.

PRODUCTION

Editor

Lee Thomas

Journal Administrator

Anne Willsher

EDITORIAL ADVISORY BOARD

Yu-Mei (Yu) Chao, RN, PhD

Adjunct Professor, Department of Nursing, College of Medicine, National Taiwan University, Taipei, Taiwan.
Chairperson, Taiwan Nursing Accreditation Council.

Mary Courtney, RN, BAdmin(Acc), MHP, PhD, FRCNA, AFCHSE

Assistant Dean (Research) Faculty of Health, Queensland University of Technology, Brisbane, Queensland, Australia.

Karen Francis, RN, PhD, MHlthSc, MEd, Grad Cert Uni Teach/Learn, BHlth Sc Nsg, Dip Hlth Sc Nsg

Professor and Head of School, School of Nursing and Midwifery, Monash University, Gippsland Campus, Churchill, Victoria, Australia.

Desley Hegney, RN, RM, CNRN, COHN, DNE, BA(Hons), PhD, FRCNA, FAIM, FCN(NSW)

Professor, Alice Lee Centre for Nursing Studies, National University of Singapore, Singapore.

Linda Kristjanson, RN, BN, MN, PhD

School of Nursing, Midwifery and Postgraduate Medicine, Edith Cowan University, Churchlands, Western Australia, Australia.

Anne McMurray, RN, BA (Psych), MEd, PhD, FRCNA

Research Chair in Nursing, Murdoch University, Peel Health Campus, Mandurah, Western Australia and Adjunct Professor of Nursing, Research Centre for Clinical and Community Practice Innovation, Griffith University, Queensland.

Colin Torrance, RN, DipLscN, BSc (Hon), PhD

Professor in Health Professional Education; Head of Simulation; Faculty of Health, Sports and Science, University of Glamorgan, Pontypridd, United Kingdom.

Lesley Wilkes, RN, CM RenalCert, BSc(Hons), GradDipEd(Nurs), MHPed, PhD

Professor of Nursing, Sydney West Area Health Service and the University of Western Sydney, Sydney, New South Wales, Australia.

CONTENTS

RESEARCH PAPERS

- The predictors and outcome of psychiatric disorders among survivors post-earthquake: survey from Sichuan, China 5
Dongling Liu, Xiaolian Jiang, Samantha Pang, Sijian Li
- Association between CD4+ T-cell count, atypical squamous cells and Schiller's test in women with HIV/AIDS 14
Daniele Mary Silva de Brito, Gilmara Holanda da Cunha, Elucir Gir, Julyana Gomes Freitas, Marli Teresinha Gimeniz Glavão
- The effects of mindfulness training program on reducing stress and promoting well being among nurses in critical care units 22
Hee Kim Lan, Pathmawathi Subramanian, Norsiah Rahmat, Phang Cheng Kar

SCHOLARLY PAPERS

- Overseas qualified nurses in Australia: reflecting on the issue 32
Grazyna Stankiewicz, Margaret O'Connor
- Health literacy, does it make a difference 39
Anne Johnson

AUSTRALIAN JOURNAL OF ADVANCED NURSING REVIEW PANEL: AUSTRALIA

Tod Adams, Masters Nursing (Nurse Practitioner), Grad. Cert Aged Care, Grad. Cert. Coronary Care, Grad. Cert Health Management, Bachelor health Science (Nursing), NSW Health, SESIAHS, Shoalhaven Hospital, New South Wales

Dr Alan Barnard, RN, BA, MA, PhD, Queensland University of Technology, Brisbane, Queensland

Philip Benjamin, RPN, BEd, Masters candidate (MMSoc)

Claire Boardman, B.App.Sc, Grad Cert IC, MPH, CICP, Queensland Health, Thursday Island, Queensland

Sally Borbasi, RN, Bed (Nsing), MA (Edu: Research), PhD, Griffith University, Meadowbrook, Queensland

Cathy Boyle, the Prince Charles Hospital and Health District, Chermiside, Queensland

Carolyn Briggs, RN, RM, Dip. CHN, BA, MA, DN, University of Technology, Sydney, New South Wales

Matiu Bush, MPH, Alfred Health, Melbourne, Victoria

Julie Considine, RN, RM, BN, EmergCert, GDipNursAcuteCare, MNurs, PhD, FRCNA, Deakin University-Northern Health Clinical Partnership, Victoria

Dr Marie Cooke, RN, DAppSc (Nsg & Unit Management), BAppSc (Nsg), MSPD, PhD, Griffith University, Nathan, Queensland

Mary Courtney, RN, BAdmin, MHP, PhD, FRCNA, AFCHSE, Queensland University of Technology, Brisbane, Queensland

Wendy Cross, RN, RPN, BAppSc, Med. PhD MAICD, FRCNA, FACMHN, Monash University, Clayton, Victoria

Trish Davidson, RN, ITC, BA, Med, PhD, Curtin University of Technology, Chippendale, New South Wales

Judith Dean, RN, Midwife, BN MPHTM PhD Candidate, Queensland Health and Griffith University, Meadowbrook, Queensland

Tess Dellagiacoma, RN, BA, MA, LLB, Contractor, NSW

Dr Michelle Digiacomio, BA, MHLthSci (Hons), PhD, Curtin University of Technology, Chippendale, New South Wales

Jim Donnelly, FRCNA, RMN, SRN, NDN, CertApprec. Obst.Care, ICU Cert, BAppScAdvNurs, MBA, Asset Management, Melbourne, Victoria

Sandra Dunn, RN, PhD, FRCNA, Charles Darwin University, Casuarina, Northern Territory

Trisha Dunning, RN, Med, PhD, FRCNA, Geelong Hospital, Victoria

Dr David Evans, RN, PhD, University of South Australia, Adelaide, South Australia

Jenny Fenwick, RN, PhD, Curtin University, Western Australia

Ritin Fernandez, RN, MN(critical care), PhD Candidate, Sydney South West Area Health Service, Sydney, New South Wales

Joanne Foster, RN, Renal Cert, DipAppSc(NsgEdn), BN, GradDip(CIEdn), MEdTech, MRCNA, QLD University of Technology, Red Hill, Queensland

Karen Francis, RN, PhD, MHLthSc, Nsg.Med, Grad Cert Uni Tech/Learn, BHLth Sc, Nsg, Dip Hlth Sc, Nsg, Monash University, Churchill, Victoria

Deanne Gaskill, BAppSc (Nsg), GrDipHSc (Epi), MAppSc (HED), Queensland University of Technology, Ash Grove, Queensland

Elizabeth Gillespie, RN, RM, SIC, Peri-op Cert, MPubHlth(Melb), CICP, Nurse Immuniser, DipPM, Southern Health, Clayton, Victoria

Dr Judith Godden, RN, PhD, BA(Hons), DipEd, University of Sydney, New South Wales

Judith Gonda, RN, RM, BAppSci (AdvNursing-Educ), MN, PhD, Australian Catholic University, Brisbane, Queensland

Dr Jennene Greenhill, RN, PhD, MSPD, GradDipAppSc, RPN, BA, Flinders University, Adelaide, South Australia

Marianne Griffin, RN, BArts, PeterMacCallum Cancer Centre, Melbourne, Victoria

Rhonda Griffiths, RN, BEd (Nsg), MSc (Hons), PhD, University of Western Sydney, New South Wales

Ruth Harper, BSc, RGN, MA, Royal Melbourne Hospital, Victoria

Dr Ann Harrington, RN, BEd, MNsg, Flinders University, Bedford Park, South Australia

Dr Louise Hickman, RN BN, MPH (UNSW), PhD, A/ Lecturer, University of Sydney, New South Wales

Debra Kerr, RN, BN, MBL, Grad Cert (Research and Research Meth ods), PhD, Senior Lecturer, honours Coordinator, Victoria University, Victoria

Virginia King, RN, MNA, BHA, BA, Southern Cross University, Lismore, New South Wales

Dr David Lee, DrPH, MPH, GradDip (CritCareNsg), BAppSc(Nsg), FRCNA, FCN (NSW), Carlton, Victoria

Geraldine Lee, MPhil, PGDE, BSc (Physiology), RGN, Albert Park, Melbourne

Dr Joy Lyneham, RN, BAppSci, GradCertEN, GradDipCP, MHSc, PhD, FRCNA, Monash University, Victoria

Dr Jeanne Madison, RN, MPH, PhD, University of New England, Armidale, New South Wales

Elizabeth Manias, RN, BPharm, MPharm, MNursStud, PhD, CertCritCare, FRCNA, The University of Melbourne, Carlton, Victoria

Dr Peter Massey, RN, GradCertPublicHlth, DrPH, Hunter New England Health, Tamworth, New South Wales

Jacqueline Mathieson, GradCert(Cancer and Palliative Nsg), GradDip(Cancer and Palliative Nsg) (in progress), PeterMacCallum Cancer Centre, Richmond, Victoria

Katya May, RN, RM, CNM (Certified Nurse Midwife, USA), NP (Nurse Practitioner in Women's Health, USA), MSN, BA, Gold Coast TAFE, Griffith University, Brisbane, Queensland

Dr Jane Mills, RN, PhD, MN, BN, Grad.Cert.Tert. Teaching, Monash University, Churchill, New South Wales

Kathleen Milton-Wildey, RN, BA, DipEd, MA, FCN, University of Technology, Sydney, New South Wales

Anne McMurray, RN, BA (Psych), MEd, PhD, FRCNA, Murdoch University, Mandurah, Western Australia

Wendy Moyle, RN, PhD, MHSc, BN, DipAppSci, Griffith University, Nathan, Queensland

Dr Maria Murphy, RN, PhD, Grad Dip Critical Care, Grad Cert Tertiary Education, BN Science, Lecturer, La Trobe University, Victoria

Dr Jane Neill, RN, BSc, PhD, Flinders University, Bedford Park, South Australia

Jennifer Pilgrim, MNursStudies, BAppSci(AdvNsg), RN, RM, MRCNA, Royal District Nursing Service, Greensborough, Victoria

Marilyn Richardson-Tench, RN, PhD, ORCert, CertClinTeach, MEdSt, BAppSc (AdvNsg), RCNT (UK), Victoria University, Ferntree Gully, Victoria

Dr Yenna Salamonson, RN, PhD, BSc, GradDipNsg(Ed), MA, University of Western Sydney, New South Wales

Nick Santamaria, RN, RPN, BAppSc (AdvNsg), GradDipHlthEd, MEdSt, PhD, Curtin University of Technology, Western Australia

Afshin Shorofi, RN, BSc, MSc, PhD, Flinders University, South Australia

Dr Winsome St John, RN, PhD, MNS, GradDipEd, BAppSc (Nsg), RM, MCHN, FRCNA, Griffith University, Gold Coast, Queensland

Dr Lynnette Stockhausen, RN, DipTeach, Bed, MEdSt, PhD, Charles Sturt University, Bathurst, New South Wales

Julie Sykes, RGN, Bsc(Hons Health Care Studies (Nsg), PGDip(health Service Research and Health Technology Assessment), WA Cancer and Palliative Care Network, Nedlands, Western Australia

Dr Chris Toye, RN, BN (Hons), PhD, GradCert(TertiaryTeaching), Edith Cowan University, Churchlands, Western Australia

Victoria Traynor, PhD, BSc Hons, RGN, University of Wollongong, New South Wales

Thea van de Mortel, RN, BSc (Hons), MHSc, ICUCert, FCN, FRCNA, Southern Cross University, Lismore, New South Wales

Sandra West, RN, CM, IntCareCert, BSc, PhD, University of Sydney, New South Wales

Lesley Wilkes, RN, BSc(Hons), GradDipEd(Nurs), MHPed, PhD, University of Western Sydney and Sydney West Area Health Service, New South Wales

Dianne Wynaden, RN, RMHN, B.AppSC(Nursing Edu), MSc(HSc) PHD, Curtin University of Technology, Western Australia

Patsy Yates, PhD, RN, FRCNA, Queensland University of Technology, Kelvin Grove, Queensland

AUSTRALIAN JOURNAL OF ADVANCED NURSING REVIEW PANEL: INTERNATIONAL

Mahmoud Al-Hussami, RN, DSc, PhD, Assistant Professor & Department Head, Community Nursing, University of Jordan, Amman, Jordan

Yu-Mei (Yu) Chao, RN, PhD, MEd, BSN, National Taiwan University, Taipei, Taiwan

Dr Robert Crouch, OBE, FRCN, Consultant Nurse, Emergency Department, Southampton General Hospital, University of Southampton, United Kingdom

Desley Hegney, RN, CRRN, COHN, DNE, BA (Hons), PhD, FRCNA, FIAM, FCN (NSW), National University of Singapore, Singapore

Natasha Hubbard Murdoch, RN, CON(C), BSN, MN(c), Saskatchewan Institute of Applied Science and Technology, Canada

Jennifer Lillibridge, RN, MSN, PhD, MRCNA, Associate Professor, California State University, Chico, California, USA

Katherine Nelson, RN, PhD, Victoria University of Wellington, New Zealand

Davina Porock, RN, BAppSc(Nsg), PGDip(Med-Surg), MSc(Nsg) PhD(Nsg), Professor of Nursing Practice, University of Nottingham, United Kingdom

Michael Pritchard, EN, RGN, Dip(HigherEd), ENB(ITU course), BA(Hons)SpecPrac and ENB Higher award, MAdvClinPrac, ENB TeachAssClinPrac, Clatterbridge Hospital, Wirral, United Kingdom

Vince Ramprogus, PhD, MSc, BA (Hons), RGN, RMN, Pro Vice Chancellor/ Dean of Faculty, Manchester Metropolitan University, Manchester, United Kingdom

Colin Torrance, RN, BSc(Hon), PhD, Sport and Science University of Glamorgan Pontypridd, United Kingdom

The predictors and outcome of psychiatric disorders among survivors post-earthquake: survey from Sichuan China

AUTHORS

Dongling Liu

MD, RN
West China School of Nursing/West China Hospital,
Sichuan University
37 Guoxue Xiang Street, Chengdu 610041, Sichuan
Province, China.
nancyldl@163.com

Xiaolian Jiang

PhD, RN, Professor
West China School of Nursing/West China Hospital,
Sichuan University
37 Guoxue Xiang Street, Chengdu 610041, Sichuan
Province, China.
jiang_xiaolian@126.com

Samantha Pang

PhD, MSc, RN, RGN
School of Nursing, The Hong Kong Polytechnic University
PQ425, School of Nursing, The Hong Kong Polytechnic
University, Hung Hom, Kowloon, HKSAR
samantha.pang@polyu.edu.hk

Sijian Li

PgD, Mphil, PhD, RN
School of nursing, The Hong Kong Polytechnic University
PQ425, School of Nursing, The Hong Kong Polytechnic
University, Hung Hom, Kowloon, HKSAR
si.jian.li@polyu.edu.hk

KEYWORDS

Psychiatric disorders; disasters; earthquake

ABSTRACT

Objective

The aims of the study were to investigate predictors and outcomes of psychiatric disorders among survivors post-earthquake.

Design

Cross-sectional design survey.

Setting

Government-aided communities with temporary shelters.

Subjects

A multistage stratified and cluster sampling strategy was employed to select participants via face-to-face interviews, and a total of 1,297 survivors participated in the research.

Main outcome measure

Psychiatric disorders were measured with self-reporting questionnaire-20 (SRQ-20), and quality of life was measured with medical outcomes study 36-item short form health survey (SF-36) and a series of problems were made to evaluate the demographic characteristics of survivors.

Results

The findings of the present study show that psychiatric morbidity was very prevalent among survivors (76.6%). Negative correlation was found between the total score of SRQ and PCS ($r_s = -0.525$, $p < 0.001$), and MCS ($r_s = -0.679$, $p < 0.001$) by Pearson correlation analysis. The multivariate logistic regression analysis demonstrated that female, aged 60 or older, having financial burden and having >2 chronic diseases were significant risk factors for psychiatric disorder. While married, monthly income > ¥1,500, and with medical insurance were significant protection factors against psychiatric disorders.

Conclusions

The psychiatric morbidity was very prevalent among survivors two years after the earthquake. The survivors with psychiatric disorders tend to have poor quality of life. Appropriate public health and medical interventions should put an emphasis on survivors who are female, aged 60 or older, having financial burden and having >2 chronic diseases because they are at heightened risk for psychiatric disorders.

INTRODUCTION

At 14:28 PM on 12 March 2008, an earthquake measuring 8.0 on the Richter scale struck the Wenchuan in South West China. The earthquake resulted in a high death toll, injuries and damage. Approximately, 69,229 people lost their lives, 374,643 people were injured and 17,923 people missing. Experiencing a disaster can profoundly affect one's psychological well-being. Over the years, the subject of the mental health of survivors of natural disasters has attracted much attention from researchers, and many studies have provided evidence of psychological sequelae post-earthquake (Zhou et al 2013; Priebe et al 2011; Procter and Crowley 2011).

One study (Aziz and Aslam 2012) examined psychiatric morbidity after a natural disaster among survivors who were extricated from under the rubble in a severely earthquake affected area eight months after the earthquake, found that 52.0% of survivors filled the criterion for major depression, 32.5% were diagnosed with Post-traumatic Stress Disorder (PTSD), 15.0% with dysthymia, and 25.0% with agoraphobia. Moreover, 77.0% of the respondents had been diagnosed with at least one psychiatric disorder.

A study in Peru (Cairo et al 2010) assessed 298 adults five months after an earthquake in 2007 found 25.2% had at least one symptom of psychiatric morbidity. The study (Chou et al 2007) in Taiwan on the impact of Chi-Chi earthquake involving 301 survivors two years after the disaster also found 4.2% had been diagnosed with at least one psychiatric disorder, suicidality were 5.6%, and drug abuse/dependence were 5.1%.

It is known that the predictors of psychiatric disorders in various post-disaster stages differ, little research has been done to examine the predictors of psychiatric disorders long-term after the disaster. A study by Zhou et al (2013) showed the risk factors for psychiatric disorders included old age, female gender, low school education and witnessing death in an earthquake. Chou et al (2007) found that sleep disturbance was the only statistically significant factor for psychiatric disorder two and three years after the disaster. These studies on psychiatric disorders among disaster survivors indicated that several inconsistencies still remain with regard to its determinants. Therefore, more study is warranted to find factors influencing psychiatric disorders.

In addition, earthquake survivors showed a wide range of psychosocial problems, including extended grief, deteriorated quality of life and withdrawal. Chinese survivors reported decreased quality of life (Ke et al 2010), and 32 months after 1999 Parnitha earthquake in Greece, adolescents reported a negative impact on their psychological and social well-being, and decreased academic performance (Goenjian et al 2011).

In recent years, an increasing number of studies have been published indicating several psychosocial consequences of disasters. But little research has been done to examine both the predictors and outcome of psychiatric disorders two years after the disaster. Therefore, the present cross-sectional study was conducted to assess the psychiatric disorders of the survivors in 10 shelters in Sichuan province, south-west China. The aim of the present study was twofold: (1) to investigate levels of psychiatric disorders two years after the earthquake; and (2) to identify risk factors and the outcome of psychiatric disorders among survivors.

METHODS

Design

This study used a cross-sectional design. The purpose of this study was to identify the levels, risk factors and the outcome of psychiatric disorders among survivors two years after an earthquake in Sichuan province, south-west China.

Sample

A multistage stratified and cluster sampling strategy was employed to select participants from zones within the area proclaimed by the State Council as an earthquake hit region. The earthquake-affected region was

classified into three zones: Zone One referred to the region situated in a fracture zone of the earthquake, with devastating casualties and collapse of many buildings; Zone Two referred to the region adjoining Zone One, but with fewer collapsed buildings and casualties than in Zone One; Zone Three referred to other affected areas. Three counties were randomly selected from each of the classified zones. A systematic sampling approach was adopted from these nine counties to randomly select 10 shelters, three in Zone One, four in Zone Two, and two in Zone Three. Inclusion criteria were as follows: (a) personally experienced this earthquake; (b) clear consciousness, without obvious language barrier; (c) voluntary participation in the study. Study exclusion criteria were: (a) cannot communicate verbally or in writing; (b) cognitive disorders. Initially 1,522 individuals were surveyed, but 225 individuals showed insufficient responses or did not complete the questionnaire. Therefore, the final sample included 1,297 participants (response rate =85.2%).

Data collection

The data for the research were collected by interviewers from staff of the Department of Social Medicine at Sichuan University. Prior to this study, three training conferences were held to train the interviewers. The aim and procedure of the research was explained to the interviewers. They were taught interview techniques to avoid causing any further or additional upset to the interviewees.

After contact with local government and a community service organisation, this survey was carried out on two government-aided communities with temporary shelters for Wenchuan earthquake survivors between 1 June 2010 and 31 August 2010. Respondents were required to fill in the questionnaires independently according to their actual feelings. Each participant was interviewed by a trained interviewer in a private place at the shelter. The questionnaire took 30 minutes to complete. The interviewer read each question verbatim to respondents with a low level of education. The respondent then selected the appropriate response.

The first 134 completed questionnaires were re-administered by a different interviewer. The inter-rater reliabilities ranged from 0.85 to 0.90. The results indicated that the data collection method was feasible and all of the participants can easily understand the content of the questionnaires.

Measures

The personal characteristics was self-designed based on literature reviews. It was composed of age, employment status, marital status, monthly family income, marital status, years of education, medical insurance, number of chronic diseases, type of housing now living and so on.

Self-Reporting Questionnaire-20 (SRQ-20) was used to measure psychiatric disorders. SRQ-20 developed by the World Health Organization has been used to detect the prevalence rate of psychiatric morbidity of community-dwelling population in developing countries. This scale is a common psychiatric assessment tool which has been translated into various versions (Scholte et al 2011; Richardson et al 2010). It includes 20 neurotic items which reflect depression symptom, anxiety symptom and psychosomatic complaints with score 0 indicating 'no symptom' and score 1 'having symptom'. The total score ranged from 0 to 20, with a higher score indicating a higher level of psychiatric distress. The optimal cut-off point for SRQ-20 is 7/8. Individuals with scores higher than the cut-off point are identified as having psychiatric disorders. The Chinese version of SRQ-20 was developed in 2008, Cronbach's α is .91, test-retest reliability is 0.94, item-total correlation ranges from .51 to .69 and the optimal cut-off point is defined as 6/7 yielding sensitivity of 93% and specificity of 62% (Hu et al 2008). Cronbach's α in this study was .80. According to the optimal cut-off point of the Chinese version of SRQ-20, participants with scores > 7 were identified as having a psychiatric disorder and scores < 6 were identified as without psychiatric disorder (0 = without psychiatric disorder; 1 = psychiatric disorder).

Quality of life was measured by the Short Form 36 (SF-36). The SF-36 is designed to measure quality of life among the general population, which contains 36 items, measuring eight domains of quality of life: physical

functioning (PF, 10 items), role-physical (RP, 4 items), bodily pain (BP, 2 items), general health (GH, 5 items), vitality (VT, 4 items), social functioning (SF, 2 items), role-emotional (RE, 3 items), mental health (MH, 5 items). Another health indicator reported health transition evaluating the changes of health status over the past year. The scale is composed of two dimensions which are defined as physical component summary (PCS) and mental component summary (MCS), PCS is composed of PF, RP, BP and GH, MCS is composed of VT, SF, RE and MH. The score in each domain of the SF-36 was transformed into a standard score, ranging from 0 to 100 (Brazier et al 1992). Cronbach's α of each subscale ranges from .73 to .96, test-retest reliability ranges from .69 to .81. Internal consistency reliability of the Chinese version ranges from .66 to .88 and test-retest reliability ranges from .66 to .94 (Li et al 2003). In this study, internal consistency reliability of eight subscales of SF-36 ranges from 0.85 to 0.96.

Ethical considerations

Prior to the study, ethical approval was obtained from the Human Subjects Ethics Sub-committee of Sichuan University. In addition, before the investigation, each participant was told the study goals, data collection procedure before they signed written informed consent. They were assured that anonymity and confidentiality would be guaranteed and the right to withdraw from the study at any time with no penalty. No pressure or inducement of any kind was applied to encourage students to participate in the research.

Data Analysis

The mean scores of psychiatric disorders and quality of life were described by mean and standard deviation. The prevalence rate of psychiatric disorder was described by frequency and percentage. The differences of scores SRQ between different gender, age, marital status, monthly income, number of chronic diseases were compared by single sample t-test or ANOVA. Pearson correlation analysis was performed to explore the relationships between psychiatric disorders and physical/mental health. Additionally, multivariate logistic regression analysis were performed to identify the independent predictors of SRQ scores. P value < 0.05 (two-tailed) was considered statistically significant. To ensure that appropriate statistical analyses were used for, tests of central tendency, the distribution of SRQ score were examined first. Data were analysed using Statistical Package for the Social Sciences (SPSS) version 17.0.

RESULTS

Characteristics of Participants

60.4% (n=784) of the respondents were female, the mean age was 50.61 years (SD=17.67), ranging from 0 years to 90 years. Additionally, 11.4% (n=148) of the respondents were <30 years old, 24.1% (n=312) were >60 years old, and the majority of participants were unemployed. 78.3% (n=1016) of the respondents were married. 48.7% (n=632) of the respondents were illiterate or only graduated from primary school. The monthly income of 69.5% (n=901) respondents was lower than ¥1,500, 39.0% (n=506) of the participants suffered from >2 types of chronic diseases (table 1).

SRQ of respondents

The mean score of psychiatric distress was 4.68 (SD=1.71). 76.6% (n=994) of the respondents reported psychiatric morbidity. A marked higher score on SRQ was found among survivors who were female, above 60 years old, single/divorced/widowed, ethnicity minority, and the monthly family income <¥1,500, had financial burden, with >2 chronic diseases, and without medical insurance. However, there were no statistically significant differences on scores on SRQ among different levels of education, employment status and people who they lived with (table 2).

Influencing factors of SRQ

The results of Pearson correlation analysis between PCS, MCS and SRQ showed that negative correlation was found between total score of SRQ and PCS ($r_s = -0.525$, $n = 1297$, $p < 0.001$), and MCS ($r_s = -0.679$, $n = 1297$, $p < 0.001$).

The results of multivariate logistic regression analysis demonstrated that females, aged 60 or older, having financial burden and with >2 chronic diseases were risk factors for psychiatric disorder. While married, monthly income $>¥1,500$, and with medical insurance were protective factors for psychiatric disorder (table 3).

DISCUSSION

The findings of the present study showed that psychiatric morbidity was very prevalent among survivors two years following Sichuan earthquake. This study's results were consistent with previous studies (Irmansyah et al 2010; Onder et al 2006). In addition, according to Myers et al (2005) views, the duration of psychiatric disorders among survivors who experienced devastating natural disasters sustained for two years or more. These observations indicate that the mental health needs of disaster survivors are so great that mental health relief programs should be set up even two years after the disaster.

The results in the present study showed that female survivors tended to have a higher score on SRQ. These results were consistent with the prior studies (Viswanath et al 2013; Hyodo et al 2010). Female vulnerability to psychiatric disorder has been attributed to biological markers and their inferior social status in many societies (Liu et al 2012). Firstly, females are more sensitive to disasters and traumatic events than males and are therefore more likely to be affected by mental health problems. Secondly, biological markers were considered to be responsible for the difference. Ressler et al (2011) found that the gender-specific difference may occur via oestrogen regulation of ADCYAP1R1, which predicts psychiatric disorders diagnosis and symptoms in females only. Porter et al (2008) found that the genotype A218C of TPH-1 in females may be associated with the

Table 1: Characteristics of Participants (n = 1297)

Social-demographic Characteristics	n	%
Gender		
Male	513	39.6
Female	784	60.4
Age (years)		
<30	148	11.4
30~	278	21.4
40~	249	19.2
50~	310	23.9
60~	312	24.1
Marital status		
Married	1016	78.3
Single/divorced/widowed	281	21.7
Education levels		
Illiteracy	173	13.3
Primary school	459	35.4
Junior/high school	622	48.0
Diploma or above	43	3.3
Employment status		
Employed	251	19.4
Unemployed	981	75.6
Full time student	65	5.0
Ethnicity		
Han	589	45.4
Ethnicity minority	708	54.6
Religion		
No	74	5.7
Yes	1223	94.3
People who they live with		
Alone	234	18.0
Partner	589	45.4
Parents	341	26.3
Other	96	7.4
Monthly family income		
<¥1,500	901	69.5
>¥1,500	396	30.5
Financial burden		
No	897	49.9
Yes	403	51.1
Number of chronic diseases		
0 or 1	791	61.0
2 or more	506	39.0
Medical insurance		
No	904	69.7
Yes	393	30.3

Table 2: Univariate analysis of psychiatric disorders among survivors (n = 1297)

Variables	N	SRQ	t/F	P
Gender				
Male	513	4.39(0.59)	41.58	0.000**
Female	784	5.90(0.67)		
Age (years)				
<30	148	4.23(0.64)	30.34	0.003**
30~	278	4.13(0.45)		
40~	249	3.95(0.63)		
50~	310	4.44(0.42)		
60~	312	4.86(0.57)		
Marital status				
Married	1016	4.53(1.21)	18.75	0.000**
Single/divorced/widowed	281	5.99(0.93)		
Education levels				
Illiteracy	173	4.55(0.65)	1.12	0.070
Primary school	459	4.51(0.87)		
Junior/high school	622	4.63(0.95)		
Diploma or above	43	4.61(0.34)		
Employment status				
Employed	251	4.12(0.35)	2.34	0.162
Unemployed	981	4.14(0.67)		
Full time student	65	4.10(0.81)		
Ethnicity				
Han	589	4.34(0.12)	58.58	0.000**
Ethnicity minority	708	5.67(0.54)		
Religion				
No	74	4.35(0.76)	1.41	0.158
Yes	1223	4.43(0.45)		
People who they live with				
Alone	234	4.31(0.56)	1.76	0.234
Partner	589	4.32(1.45)		
Parents	341	4.34(0.56)		
Other	96	4.28(0.86)		
Monthly family income				
<¥1,500	901	5.89(0.54)	33.85	0.000**
>¥1,500	396	4.43(0.78)		
Financial burden				
No	897	4.95(0.56)	18.65	0.000**
Yes	403	5.82(1.12)		
Number of chronic diseases				
0 or 1	791	4.87(1.23)	2.51	0.013*
2 or more	506	5.03(0.94)		
Medical insurance				
No	904	4.94(0.73)	5.57	0.000**
Yes	393	4.71(0.56)		

* $p < 5$; ** $p < 0.01$

regulation of peripheral tryptophan levels and therefore availability of tryptophan to the brain, which may have relevance to a range of psychiatric conditions. Additionally, above 60 years old, single/divorced/widowed, with two or more chronic diseases, monthly family income <¥1,500, with financial burden and without medical insurance survivors showed much higher score of SRQ, which were in parallel to previous studies (Tsuchida et al 2009; Klöner et al 1997). On the other hand, we know emotional support from a spouse was regarded as the most important social support system which would be helpful in coping with stressful events efficiently and recovering from disaster crisis quickly. In the study, the mean scores for MCS of single, divorced or widowed people were lower than those of the married. That result was a supplement for previous studies (Aziz and Aslam 2012; Kulkarni and Pole 2008). Additionally, the ethnicity minority populations also have higher score of SRQ than Han, which was consistent with previous research (Chen et al 2012; Liu et al 2012). A reasonable explanation could include that they tend to live in a more vulnerable situation before a disaster, suffer from great loss during the earthquake, have inadequate social support systems, and that probably increases the negative psychosocial impact after the disaster.

Table 3: Logistic regression analysis of psychiatric disorders among survivors (n = 1297)

Variables	B	P	OR	95%CI (OR)	
Gender (0= male; 1= female)	1.04	0.001**	2.82	1.46	5.44
Age(years) (0=<30 ,30~, 40~,50~;1= ≥ 60)	1.32	0.001**	3.75	2.04	6.87
Marital status (0=Single/divorced/widowed; 1= married)	-0.07	0.036*	0.62	0.48	0.92
ethnicity minority	0.00	0.250	1.00	0.99	1.01
Monthly income(0= <¥1,500; 1= >¥1,500)	-0.36	0.012*	0.70	0.17	0.86
Financial burden(0= no; 1= yes)	0.86	0.013*	2.36	1.26	4.44
Number of chronic diseases(0= 0 or 1;1= 2 or more)	0.93	0.001**	2.53	1.42	0.93
Medical insurance (0=no; 1= yes)	-1.23	0.013**	0.51	0.38	0.96

* $p < 5$; ** $p < 0.01$

This study examined the correlation between PCS, MCS and SRQ. Negative correlation was found between the total score of SRQ and PCS ($r_s = -0.525$, $p < 0.001$) and MCS ($r_s = -0.679$, $p < 0.001$). Survivors with psychiatric disorders tend to have poor quality of life. Although there are few studies exploring the relationship between psychiatric disorder and quality of life among survivors two years following the Sichuan earthquake, the results in the study were consistent with similar studies focusing on children and adolescence post-disaster (Jia, Tian, He et al 2010; Chou et al 2004). Victims who were identified as psychiatric morbidity reported poor scores on PCS and MCS, indicating poor quality of life, which emphasised the importance of focusing on long-term psychiatric morbidity among disaster-exposed survivors.

Additionally, the multivariate logistic regression models of SRQ showed there were several negative predictors or defensive factors of the occurrence of psychiatric disorder and a significant negative predictor was 60 or older (OR 3.75; 95%CI 2.04-6.87), survivors aged 60 or older showed more severe psychiatric disorder than those aged <60. This outcome was consistent with previous studies (Jia, Tian, Liu et al 2010; Yazgan et al 2006). In addition, the results demonstrated that females, aged 60 or older, having financial burden and having >2 chronic diseases were risk factors for psychiatric disorder. While married, monthly income >¥1,500, and with medical insurance were protective factors for psychiatric disorder. These findings were consistent with previous studies (Kuo et al 2003). Additionally, having medical insurance can reduce the economic pressure, and make up for the financial loss, and alleviate psychiatric disorders. The results indicate that appropriate public health operation procedure for psychiatric service after an earthquake should be established.

LIMITATIONS

The study has limitations as follows: firstly, both the SRQ-20 and SF-36 are self-administrated questionnaires; a response bias might exist due to social desirability. Secondly, a cross-sectional observational research design was utilised so that dynamic variation of psychiatric morbidity among the survivors has not been observed. In future, it is necessary to characterise longitudinally the survivors' psychiatric morbidity after a massive earthquake with various demographics and earthquake-related experiences and to identify risk factors that were associated with psychiatric morbidity for the survivors.

CONCLUSION

A high prevalence of psychiatric morbidity was found among survivors two years after the 2008 Sichuan earthquake. Furthermore, the predicting factors for psychiatric disorders were found to be related to being female, being aged 60 or older, having financial burden and having >2 chronic diseases. The survivors with psychiatric disorders tend to have lower quality of life. These findings can contribute to post-disaster rebuilding and relief work. The survivors at high risk for psychiatric disorders should be particularly considered. Moreover, the findings support focusing on post-earthquake efforts to provide effective and sustainable mental health services for survivors in order to prevent psychiatric diseases and improve quality of life.

REFERENCES

- Aziz, S. and Aslam, N. 2012. Psychiatric Morbidity and Work and Social Adjustment Among Earthquake Survivors Extricated from under the Rubble. *Indian Journal of Psychological Medicine*, 34(4):346-349.
- Brazier, J.E., Harper, R., Jones, N.M., O'Cathain, A., Thomas, K.J., Usherwood, T. and Westlake, L. 1992. Validating the SF-36 health survey questionnaire: new outcome measure for primary care. *BMJ*, 305(6846):160-164.
- Cairo, J.B., Dutta, S., Nawaz, H., Hashmi, S., Kasl, S. and Bellido, E. 2010. The prevalence of posttraumatic stress disorder among adult earthquake survivors in Peru. *Disaster Medicine and Public Health Preparedness*, 4(1):39-46.
- Chen, G., Shen, H. and Chen, G. 2012. A cross-sectional study on posttraumatic stress disorder among elderly Qiang citizens 3 years after the Wenchuan earthquake in China. *Canadian Journal of Psychiatry. Revue Canadienne de Psychiatrie*, 57(9):547-553.
- Chou, F.H., Wu, H.C., Chou, P., Su, C.Y., Tsai, K.Y., Chao, S.S., Chen, M.C., Su, T.T., Sun, W.J. and Ou-Yang, W.C. 2007. Epidemiologic psychiatric studies on post-disaster impact among Chi-Chi earthquake survivors in Yu-Chi, Taiwan. *Psychiatry and Clinical Neurosciences*, 61(4):370-378.
- Chou, F.H., Chou, P., Lin, C., Su, T.-P., Ou-Yang, W.-C., Chien, I.-C., Su, C.-Y., Lu, M.K. and M.-C Chen. 2004. The relationship between quality of life and psychiatric impairment for a Taiwanese community post-earthquake. *Quality of Life Research*, 13 (6):1089-1097.
- Goenjian, A.K., Roussos, A., Steinberg, A.M., Sotiropoulou, C., Walling, D., Kakaki, M. and Karagianni, S. 2011. Longitudinal study of PTSD, depression, and quality of life among adolescents after the Parnitha earthquake. *Journal of Affective Disorders*, 133(3):509-515.
- Hu, J. B., Huang, M.L., Huang, W.W., Hu, S.H., Wei, N., Zhou, W.H. and Xu, Y. 2008. Reliability and validity of the self-reporting questionnaire for assessing mental health applied in Wenchuan earthquake. *Zhonghua Yu Fang Yi Xue Za Zhi. Chinese Journal of Preventive Medicine*, 42(11):810-813.
- Hyodo, K., Nakamura, K., Oyama, M., Yamazaki, O., I. Nakagawa, I., Ishigami, K., Tsuchiya, Y. and Yamamoto, M. 2010. Long-term suicide mortality rates decrease in men and increase in women after the Niigata-Chuetsu earthquake in Japan. *Tohoku Journal of Experimental Medicine*, 220(2):149-155.
- Irmansyah, I., Dharmono, S., Maramis, A. and Minas, H. 2010. Determinants of psychological morbidity in survivors of the earthquake and tsunami in Aceh and Nias. *International Journal of Mental Health Systems*, 4(1):8.
- Jia, Z., Tian, W., He, X., Liu, W., Jin, C. and Ding, H. 2010. Mental health and quality of life survey among child survivors of the 2008 Sichuan earthquake. *Quality of Life Research*, 19(9):1381-1391.
- Jia, Z., Tian, W., Liu, W., Cao, Y., Yan, J. and Shun, Z. 2010. Are the elderly more vulnerable to psychological impact of natural disaster? A population-based survey of adult survivors of the 2008 Sichuan earthquake. *BMC Public Health*, 10:172.
- Ke, X., Liu, C. and Li, N. 2010. Social support and Quality of Life: a cross-sectional study on survivors eight months after the 2008 Wenchuan earthquake. *BMC Public Health*, 10:573.
- Kloner, R. A., Leor, J., Poole, W.K. and Perritt, R. 1997. Population-based analysis of the effect of the Northridge Earthquake on cardiac death in Los Angeles County, California. *Journal of the American College of Cardiology*, 30(5):1174-1180.
- Kulkarni, Madhur, and Nnamdi Pole. 2008. Psychiatric distress among Asian and European American survivors of the 1994 Northridge earthquake. *The Journal of nervous and mental disease*, 196(8):597-604.

- Kuo, C. J., H. S. Tang, C. J. Tsay, S. K. Lin, W. H. Hu, and C. C. Chen. 2003. Prevalence of psychiatric disorders among bereaved survivors of a disastrous earthquake in taiwan. *Psychiatric Services*, 54(2):249-251.
- Li, L., H. M. Wang, and Y. Shen. 2003. Chinese SF-36 Health Survey: translation, cultural adaptation, validation, and normalisation. *Journal of Epidemiology and Community Health*, 57(4):259-263.
- Liu, Z., Z. Zeng, Y. Xiang, F. Hou, J. Li, T. Li, X. Hu, and Y. Ping. 2012. A cross-sectional study on posttraumatic impact among Qiang women in Maoxian County 1 year after the Wenchuan Earthquake, China. *Asia-Pacific Journal of Public Health*, 24(1):21-27.
- Myers, D. and David, F. 2005. Special populations in disaster. In: *Disaster Mental Health Services*. New York, Routledge:43-70.
- Onder, E., U. Tural, T. Aker, C. Kilic, and S. Erdogan. 2006. Prevalence of psychiatric disorders three years after the 1999 earthquake in Turkey: Marmara Earthquake Survey (MES). *Social Psychiatry and Psychiatric Epidemiology*, 41(11):868-874.
- Porter, R.J., Mulder, R.T., Joyce, P.R., Miller, A.L. and Kennedy, M. 2008. Tryptophan hydroxylase gene (TPH1) and peripheral tryptophan levels in depression. *Journal of Affective Disorders*, 109(1-2):209-212.
- Priebe, S., Marchi, F., Bini, L., Flego, M., Costa, A. and Galeazzi, G. 2011. Mental disorders, psychological symptoms and quality of life 8 years after an earthquake: findings from a community sample in Italy. *Social Psychiatry and Psychiatric Epidemiology*, 46(7):615-621.
- Procter, N.G. and Crowley, T. 2011. A mental health trauma response to the Japanese earthquake and tsunami. *Holistic Nursing Practice*, 25(3):162-164.
- Ressler, K.J., Mercer, K.B., Bradley, B., Jovanovic, T., Mahan, A., Kerley, K., Norrholm, S.D., Kilaru, V., Smith, A.K., Myers, A.J., Ramirez, M., Engel, A., Hammack, S.E., Toufexis, D., Braas, K.M., Binder, E.B. and May, V. 2011. Post-traumatic stress disorder is associated with PACAP and the PAC1 receptor. *Nature*, 470(7335):492-497.
- Richardson, L.K., Amstadter, A.B., Kilpatrick, D.G., Gaboury, M.T., Tran, T.L., Trung, L.T., Tam, N.T., Tuan, T., Buoi, L.T., Ha, T.T., Thach, T.D. and Acierno, R. 2010. Estimating mental distress in Vietnam: the use of the SRQ-20. *International Journal of Social Psychiatry*, 56(2):133-142.
- Scholte, W.F., Verduin, F., van Lammeren, A., Rutayisire, T. and Kamperman, A.M. 2011. Psychometric properties and longitudinal validation of the self-reporting questionnaire (SRQ-20) in a Rwandan community setting: a validation study. *BMC Medical Research Methodology*, 11:116.
- Tsuchida, Masayuki, MA Kawashiri, Ryota Teramoto, Mutsuko Takata, Kenji Sakata, Wataru Omi, Masaki Okajima, Masayuki Takamura, Hidekazu Ino, and Yoshihito Kita. 2009. Impact of severe earthquake on the occurrence of acute coronary syndrome and stroke in a rural area of Japan. *Circulation Journal*, 73(7):1243.
- Viswanath, Biju, Ami S Maroky, Suresh B Math, John P John, Anish V Cherian, Satish C Girimaji, Vivek Benegal, Ameer Hamza, and Santosh K Chaturvedi. 2013. Gender differences in the psychological impact of tsunami. *International Journal of Social Psychiatry*, 59(2):130-136.
- Yazgan, I.C., Dedeoglu, C. and Yazgan, Y. 2006. Disability and post-traumatic psychopathology in Turkish elderly after a major earthquake. *International Psychogeriatrics*, 18(1):184-187.
- Zhou, X., Kang, L., Sun, X., Song, H., Mao, W., Huang, X., Zhang, Y. and Li, J. 2013. Risk factors of mental illness among adult survivors after the Wenchuan earthquake. *Social Psychiatry and Psychiatric Epidemiology*, 48(6):907-915.

Association between CD4+ T-cell count, atypical squamous cells and Schiller's test in women with HIV/AIDS

AUTHORS

Daniele Mary Silva de Brito

PhD, RN
São José Hospital of Infectious Diseases, Fortaleza,
Ceará, Brazil
danielemary6@gmail.com

Gilmara Holanda da Cunha

PhD, Prof, RN
Federal University of Ceará, Fortaleza, Ceará, Brazil
gilmaraholandaufc@yahoo.com.br

Elucir Gir

PhD, Prof, RN
University of São Paulo, Ribeirão Preto, São Paulo,
Brazil
egir@eerp.usp.br

Julyana Gomes Freitas

PhD, Prof, RN
University of Fortaleza, Fortaleza, Ceará, Brazil
julyanapitt@yahoo.com.br

Marli Teresinha Gimeniz GALVÃO

PhD, Prof, RN
Federal University of Ceará, Fortaleza, Ceará, Brazil
marligalvao@gmail.com

KEY WORDS

HIV, vaginal smears, uterine cervical neoplasms, women's health

ABSTRACT

Objective

Infection with HIV increased risk for the development of cancer, such as Kaposi's sarcoma and invasive cancer of the cervix. Given the importance of health promotion in women, the purpose of this study was to perform cytological screening (Pap smear) and identify any association between CD4+ T-cell, atypical squamous cells and the Schiller's Test in women with HIV/AIDS in Brazil.

Design

Descriptive and cross-sectional study.

Setting

Gynaecology outpatient clinic in Fortaleza, Ceará, Brazil.

Subjects

A total of 76 women with HIV/AIDS were examined and included in the study.

Main outcome measures

For data collection a questionnaire to gather sociodemographic, clinical, epidemiological and gynaecological data and the association between CD4+ T-cell count, atypical squamous cells and Schiller's test in women with HIV/AIDS were performed.

Results

Seventy-six women were evaluated, among which 43.5% had a positive Schiller's test and 94.8% manifested some type of inflammatory process. There was statistical significance between atypical squamous cells and the number of partners ($P=0.021$), age of first sexual intercourse ($P=0.003$) and positive Schiller's test ($P=0.008$). Of the patients with atypical squamous cells, eight had a low-grade, intraepithelial lesion, comprising the cytopathic effect of HPV and cervical intraepithelial neoplasia grade I (CIN I); three had intraepithelial lesion high-grade (CIN comprising II and III). There was a relationship between CD4+ T-cell counts and atypical squamous cells ($P=0.028$) and a positive Schiller's test ($P=0.030$).

Conclusion

Increased vulnerability occurred to cervix changes with a reduction in the CD4+ T-cell counts.

INTRODUCTION

Infection with the Human Immunodeficiency Virus (HIV) entails an increased risk for the development of cancer (Sasco et al 2010). Cancers such as Kaposi's sarcoma, non-Hodgkin lymphoma and invasive cancer of the cervix have been recognised for a long time as associated with HIV infection, and have been classified as AIDS-defining diseases (Tanon et al 2012).

The first report relating cervical intraepithelial neoplasia (CIN) to HIV was published by Bradbeer (1987). Other publications followed and, based on this information, showed that women infected with HIV had a high prevalence of HPV infection and CIN (Sun et al 1995; Feingold et al 1990).

In 1996, Brazil adopted a policy of free access to antiretroviral therapy (ART). With the increase in access to antiretroviral therapy, HIV-positive women are expected to live longer, potentially allowing sufficient time for cervical cancer to develop. Targeted screening could potentially alleviate the strain on resources needed to screen these women (Li et al 2012). Cervical cancer is a preventable cancer of the female genital tract. The disease is caused mainly by infection with persistent oncogenic human papilloma virus (HPV), which makes timely vaccination with HPV vaccine an effective primary prevention method. However, the cost of the vaccine makes it inaccessible in developing countries, thereby leaving secondary prevention through cervical cytology as the best alternative method of cervical cancer prevention (Dim 2012).

For women with HIV, the World Health Organization (WHO) recommends that the Pap smear should be offered at the initiation of monitoring, repeated in six months, and then annually, if normal. It should be repeated at more frequent intervals if: the preliminary investigation reports any change, if there was a prior history of HPV infection, after treatment of lesions, and with a diagnosed advanced stage of immunodeficiency, with CD4+ T-cell counts < 200 cells/mm³. In case of detection of atypia, women should be referred for colposcopy (WHO 2006). As described in this study, this procedure is also adopted in the health services that cater to women with HIV/AIDS in Brazil.

HIV/AIDS is one of the most serious public health problems worldwide, representing a challenge in many ways, especially due to the absence of an effective treatment that leads to a cure, in addition to the social and economic barriers that interfere with adherence to the treatment regimen. Considering the importance of health promotion in women, the aim of this study was to perform cytological screening (Pap smear) and identify any association between CD4+ T-cell, atypical squamous cells and Schiller's Test in Women with HIV/AIDS, treated at reference service for cervical cancer in Fortaleza, Ceará, Brazil.

METHOD

This was a cross-sectional study conducted at the Institute for Cancer Prevention, in Fortaleza, Ceará, Brazil. This is a reference centre in the State of Ceará, for prevention of gynaecological cancer that offers outpatient and hospital care, specialising in gynaecology and the prevention and treatment of cancer. A convenience sample was used, with the following inclusion criteria women with HIV/AIDS, receiving treatment in 2008, and 18 years of age or older. The only exclusion criterion was history of hysterectomy.

The women completed a nursing consultation and a questionnaire was administered to obtain sociodemographic, clinical, epidemiological and gynaecological data. Following data collection, a gynaecological examination was performed, which included a Pap test. The analysis of the collected material was performed at the institution through its accredited laboratory.

To perform the statistical procedures, the Statistical Package for the Social Sciences (SPSS® for Windows®) version 19.0 was used. To estimate the association between dichotomous variables, comparing proportions,

the chi-square or Fisher's exact test was applied. For the comparison between averages the Student's t-test was used, when the distribution of the independent variable approached a normal distribution. In the applied tests the significance level of 5% was adopted.

The study followed all regulatory instructions regarding research involving human subjects, and the project was approved by the Research Ethics Committee of the São José Hospital of Infectious Diseases, under Protocol No 022/2007. All participants received information about the study and signed an informed consent form.

RESULTS

The mean age of the 76 women who participated in the study was 37.4 years. Most came from the city of Fortaleza and had up to eight years of school. It was observed that 73.7% of women earned between one and four times the minimal salary, and 48.7% had informal employment. Regarding religion, most were catholic (table 1).

Of the total participants, 90.8% reported a heterosexual exposure category and 76.3% had developed AIDS. For the CD4+ T-cell counts, 40.8% of the women had levels below 350 cells/mm³, and only 76.3% were using antiretroviral drugs. Most outpatients had monitoring on a quarterly basis. Regarding the data obtained from the gynaecological exam, external inspection found that 18.4% of women had condylomatous lesions. The Schiller's test was positive in 43.5% of women. Regarding the Pap test, 94.8% of the women had some type of inflammation, ranging from mild to severe. Of the patients with atypical squamous cells, eight had a low-grade, intraepithelial lesion, comprising the cytopathic effect of HPV and cervical intraepithelial neoplasia grade I (CIN I); three had intraepithelial lesion high-grade (CIN comprising II and III) (table 2).

Table 1: Sociodemographic characteristics of women with HIV/AIDS having cervical cancer screening

Variables	N	%
Age (in years) *		
≤ 29	15	19.7
30-39	32	42.1
≥ 40	29	38.2
Residence		
Fortaleza	66	86.8
Rural areas	10	13.2
Years of Study		
Illiterate	06	7.9
≤ 8 years	44	57.9
> 8 years	26	34.2
Family Income (minimum salary) **		
No income	03	4.0
< 1	08	10.5
1 - 4	56	73.7
5 - 8	09	11.8
Occupational Situation		
Working/Informal job	37	48.7
Unemployed	33	43.4
Retired/Pensioner	06	7.9
Religion		
Catholic	51	67.1
Non-Catholic	21	27.6
None	04	5.3

*Mean age: 37.4 years old; Standard deviation: 8.8.

**Minimum salary at that time: R\$ 465.00 (USD \$209).

Table 2: Epidemiological, clinical and gynaecological characteristics of women with HIV/AIDS having cervical cancer screening

Variables	N	%
Phase of the illness		
HIV	21	23.7
AIDS	55	76.3
Exposition category		
Heterosexual	69	90.8
Bisexual	01	1.4
Transfusion	03	3.9
Without answer	03	3.9
Antiretroviral therapy		
Yes	58	76.3
No	18	23.7
CD4+ T-cell count (mm³)*		
< 200	16	21.1
200-350	15	19.7
351-500	18	23.7
> 500	27	35.5
Time of the evaluations		
Monthly	11	14.5
Quarterly	54	71.0
Semi-annual	11	14.5
Condylomatous lesions		
Yes	14	18.4
No	62	81.6
Iodine test		
Negative	33	43.5
Positive	43	56.5
Schiller's test		
Negative	43	56.5
Positive	33	43.5
Descriptive diagnostic		
Normal	01	1.3
Inflammation	72	94.8
Immature metaplasia	01	1.3
Atrophy with inflammation	02	2.6
Atypical squamous cells		
None	58	76.3
Cells possibly non neoplastic	06	7.9
With indefinite origin	01	1.3
HPV and CIN I	08	10.5
NIC I and CIN II	03	4.0

*CD4+ T-cell count (mm³): Mean: 454.13;

Standard deviation: 249.36.

Most women had a regular partner at the time of the study (67.1%), and indicated their use of condoms (73.6%). Regarding the development of sexually transmitted diseases, 46.0% of the women reported having already had some disease, with HPV infection being cited by 51.7% of women.

The researchers conducted an association between the clinical, epidemiological, gynaecological variables, and the presence of atypical squamous cells. A statistically significant association between the presence of atypical squamous cells and the number of sexual partners ($P=0.021$), age at first intercourse ($P=0.003$), negative iodine test ($P=0.008$) and positive Schiller's test ($P=0.008$) was identified (table 3).

Regarding access to the screening exam, 85.5% of women found it difficult to schedule and obtain the preventive screening. Likewise, when inquiring about advance directives on the preventative health services exam, 46.1% reported not having been advised by a health professional or organisation about the need for the examination for preventing cervical cancer.

Table 4 shows the association between the variable CD4+ T-cell count, presence of atypical squamous cells and the Schiller's test result in women infected with HIV. There was a statistically significant association between the CD4+ T-cell count and atypical squamous cells ($P=0.028$), as well as the presence of a positive Schiller's test and CD4+ T-cell counts ($P=0.030$). This finding demonstrated an increased vulnerability to cervix changes with a reduction in the CD4+ T-cell counts.

DISCUSSION

AIDS is one of the biggest health problems today, based on its pandemic character and its severity. HIV infection has emerged as a chronic illness that is often controllable with ART. However, high levels of adherence remain necessary to achieve optimal clinical benefits of ART, and to avoid developing drug-resistant strains of HIV (Kalichman et al 2013; Cunha and Galvão 2010).

The study showed that some women had abnormal gynaecological findings, through use of the Schiller's test and Pap smear. Of these, 10.5% had CIN I and HPV, and 4.0% had CIN I and CIN II. These findings were consistent with other research on the subject,

that has indicated these changes were common in women with HIV/AIDS, and that squamous intraepithelial lesions of the cervix were more frequent in HIV-positive women overall (Atashili et al 2012; Parham et al 2006).

The findings in this study regarding the positive Schiller's test and presence of atypia corroborate the data mentioned in the current literature. Therefore, the results showed the need to enact strategies for the prevention of cervical cancer in women infected with HIV, since the surveillance of gynaecologic changes allows early detection and eradication of HPV infection and CIN, minimising the incidence of cervical cancer. It is believed that health services need to establish an urgent priority for assistance in preventing cancer of the cervix in HIV-infected women, that they can define and track cases with detected changes, in order to encourage prevention and control of cancer in these women (WHO, 2006).

By associating the presence of atypical squamous cells with other variables, we found statistical significance in relation to the number of sexual partners, age at first intercourse and a positive Schiller's test. In this context, the study showed that the multiplicity of sexual partners during a woman's lifetime was a major risk factor for HPV infection and other genital changes. Women with such practices are more vulnerable and can more easily become infected with sexually transmitted diseases, including HIV, a fact that may favour the development of cervical cancer (Jha et al 2012, Banura et al 2011).

Table 3: Association between clinical, epidemiological and gynaecological variables and atypical squamous cells

Variables	Atypical squamous cells		
	Yes N (%)	No N (%)	P Value
Number of partners			
1 - 4	2 (5.1)	37 (94.9)	0.021**
> 4	9 (24.3)	28 (75.7)	
In the last year			
None	2 (10.5)	17 (89.5)	0.720
1 or more	9 (15.8)	48 (84.2)	
Stable partner			
Yes	8 (15.7)	43 (84.3)	1.000
No	3 (12.0)	22 (88.0)	
Live with the partner			
Yes	6 (13.0)	40 (87.0)	0.430
No	5 (16.6)	25 (83.4)	
Time of the relationship (in years)			
≤ 5	3 (12.5)	21 (87.5)	1.000
> 5	8 (15.3)	44 (84.7)	
Use of condoms			
Yes	9 (16.0)	47 (84.0)	1.000
No	2 (10.0)	18 (90.0)	
Time of the last diagnosis of colon cancer			
≤ 1 year	5 (14.2)	30 (85.8)	1.000
2 or more years	6 (14.6)	35 (85.4)	
Presence of cancer in the family			
Yes	4 (11.1)	32 (88.9)	0.527
No	7 (17.5)	33 (82.5)	
Age of the first relative (in years)			
≤ 19	10 (27.0)	28 (73.0)	0.003**
> 19	1 (2.6)	37 (97.4)	
History of STD			
Yes	7 (20.0)	28 (80.0)	0.167
No	3 (7.5)	37 (92.5)	
Condylomatous lesions			
Yes	3 (21.4)	11 (78.6)	0.415
No	8 (12.9)	54 (87.1)	
Iodine test			
Negative	9 (27.3)	24 (72.7)	0.008**
Positive	2 (4.7)	41 (95.3)	
Schiller's test			
Negative	2 (4.7)	41 (95.3)	0.008**
Positive	9 (27.3)	24 (72.7)	

*Fisher's exact test. **P<0.05.

Table 4: Association between CD4+ T-cell counts, atypical squamous cells and the Schiller's test

	CD4+ T-cell counts			P Value*
	< 200 mm ³	200-500 mm ³	> 500 mm ³	
Atypical squamous cells				
Yes	4 (30.0)	6 (18.2)	1 (3.70)	0.028
No	12 (70.0)	27 (81.8)	26 (96.3)	
Schiller's test				
Positive	7 (70.0)	18 (54.5)	8 (33.3)	0.030
Negative	9 (30.0)	15 (45.5)	19 (66.7)	

*Test for linear trend.

An independent risk factor for the development of CIN was having more than five sexual partners, even when the woman was not a carrier of HPV. Furthermore, if the number of lifetime sexual partners was less than or equal to five, the chances of CIN grade II or III recurrence was 60% (Mbizvo et al 2005; Pudney et al 2005). Other studies with HIV-infected women corroborated the vulnerability of women in relation to multiple partners for the acquisition of cervical cancer (Jha et al 2012, Banura et al 2011).

In relation to early onset of sexual activity, when this occurred before age 16, there was a greater chance of HPV infection, which, consequently, increased the risk for the development of CIN and cervical cancer. This was due to the fact that the uterine transformation zone of these women was in the early process of metaplasia, so intraepithelial neoplastic lesions could progress more rapidly because of the immaturity of the cervix (Pudney et al 2005).

In this study the positive Schiller's test was associated with the presence of atypical squamous cells, showing the relationship between cellular changes and clinical alteration identified by the material collected in the screening. Preventing cervical cancer requires specialised nursing intervention. There is need for nurses to be able to collect the Pap smear and to develop guidelines aimed at promoting health to assist in maintaining the quality of life of women with HIV/AIDS. Moreover, the practice of nursing in its technical dimension provides comfort for the patient who is emotionally fragile, soothing her anxieties and fears, from the caregiver's approach during the execution of her practice.

Globally, many women with HIV are of reproductive age and many acquire the virus through sexual contact. There is also an increased risk for other sexually transmitted diseases, a fact which facilitates contamination and the development of cervical cancer. Therefore, early initiation of sexual activity, associated with consistently unprotected sex, amplifies the risk of acquiring sexually transmitted diseases, including HIV infection, and therefore the greater likelihood of developing cervical cancer in HIV-positive women (Stuardo et al 2012; Williams et al 2011). Following an active surveillance protocol that ensures gynaecologic diagnosis and treatment of gynaecological problems in women with HIV is necessary. This is especially true because the reduction in mortality from cervical cancer is possible through health promotion and the early detection of cases of precursor lesions by means of structured screening (WHO, 2006).

When evaluating immune function, it was observed that the CD4+ T-cell counts were statistically significant among patients with a positive Schiller's test ($P=0.030$) and the presence of atypical squamous cells ($P=0.028$). Immune status is one of the cofactors of paramount importance, since in immunocompromised patients, carcinogenesis-induced genital HPV is established suddenly in the presence of immunosuppression, so that women with HIV are more likely to develop cervical intraepithelial neoplasia, demonstrating an association between the severity of the neoplasia and immunosuppression (Harris et al 2005).

Currently, the presence of clinical signs of immunodeficiency, such as the CD4+ T-cell counts and quantification of viral load, are the main parameters used to initiate and monitor antiretroviral therapy in patients with AIDS. Since the early years of the epidemic, monitoring of CD4+ T-cell counts has been used as a predictive laboratory parameter of HIV disease prognosis, and also as an excellent indicator of the magnitude of risk for major opportunistic infections, such as cervical cancer, especially in patients with symptomatic disease (Heikinheimo and Lähteenmäki, 2009).

Studies indicated that patients with CD4+ T-cell counts less than 200 cells/mm³ had high-risk oncogenic HPV more frequently, so that the risk for developing intracervical cancer was higher in this group, or as immunosuppression increased, there was a greater vulnerability of developing cervical cancer (Tanon et al 2012; WHO 2006). Given this, it becomes clear that healthcare professionals should monitor the evaluation of immunosuppression of HIV-infected women due to possible changes of the cervix.

CONCLUSION

In conclusion, depending on the findings, there is a need to encourage HIV-infected women to undertake the preventive cervical cancer screening, and it becomes necessary to use appropriate information so that they are able to perform self-care. The importance of encouraging disease prevention and health promotion in relation to early diagnosis is verified by the fact that when the cancer is diagnosed in its early stage and treated appropriately, the prognosis for cure is much higher. Health promotion demands the coordinated action of those involved; it is essential to accountability, active management participation, specialised services and health professionals for mediating this practice. Associated with this, there is an urgent need for specialised services to reorganise its actions for disease prevention among women, in particular, for the prevention of cervical cancer.

Women living with HIV/AIDS are vulnerable to cervical cancer, and preventive actions are required to provide specific information associated with the early detection of disease, increasing the level of knowledge, encouraging self-care, and improving the quality of healthcare services that meet the needs of this clientele.

A limitation of this study was that the sample only contained 76 women living with HIV/AIDS, which is due to the low level of knowledge of women about the importance of having the pelvic exam, as well as socioeconomic issues that prevent access to the examination.

This study demonstrated the need to implement a specific service for prevention of cervical cancer using the screening protocol for HIV-infected women. It is suggested, however, that there is a need for training of nurses specialists in this area, because this work transcends the technical dimension; it also involves the establishment of a therapeutic relationship based on competence, confidence and commitment to the female population with HIV/AIDS. Thus, cervical cancer prevention should be performed efficiently, so that the vulnerabilities described in this study can be minimised.

REFERENCES

- Atashili, J., Miler, W.C., Smith, J.S., Ndumbe, P.M., Ikomey, G.M., Eron, J., Rinas, A.C., Myers, E. and Adimora, A.A. 2012. Age trends in the prevalence of cervical squamous intraepithelial lesions among HIV-positive women in Cameroon: a cross-sectional study. *Biomed Central research notes*, 5:590.
- Banura, C., Mirembe, F.M., Katahoire, A.R., Namujju, P.B., Mbonye, A.K. and Wabwire, F.M. 2011. Epidemiology of HPV genotypes in Uganda and the role of the current preventive vaccines: a systematic review. *Infectious Agents and Cancer*, 6(11):1-12.
- Bradbeer, C. 1987. Is infection with HIV a risk factor for cervical intraepithelial neoplasia? *Lancet*, 2(8570):1277-1278.
- Cunha, G.H. and Galvão, M.T.G. 2010. Nursing diagnoses in patients with human immunodeficiency virus/acquired immunodeficiency syndrome in outpatient care. *Acta Paulista de Enfermagem*, 23(4):526-532.
- Dim, C.C. 2012. Towards improving cervical cancer screening in Nigeria: a review of the basics of cervical neoplasm and cytology. *Nigerian Journal of Clinical Practice*, 15(3):247-252.

- Feingold, A.R., Vermund, S.H., Burk, R.D., Kelley, K.F., Schrager, L.K., Schreiber, K., Munk, G., Friedland, G.H. and Klein, R.S. 1990. Cervical cytologic abnormalities and papillomavirus in women infected with human immunodeficiency virus. *Journal of Acquired Immune Deficiency Syndromes*, 3(9):896-903.
- Harris, T.G., Burk, R.D., Palefsky, J.M., Massad, L.S., Bang, J.Y., Anastos, K., Minkoff, H., Hall, C.B., Bacon, M.C., Levine, A.M., Watts, D.H., Silverberg, M.J., Xue, X., Melnick, S.L. and Strickler, H.D. 2005. Incidence of cervical squamous intraepithelial lesions associated with HIV serostatus, CD4 cell counts, and human papillomavirus test results. *The Journal of the American Medical Association*, 293(12):1471-1476.
- Heikinheimo, O. and Lähteenmäki, P. 2009. Contraception and HIV infection in women. *Human Reproduction Update*, 15(2):165-176.
- Jha, B.M., Patel, M., Patel, K. and Patel, J. 2012. A study on cervical pap smear examination in patient living with HIV. *National Journal of Medical Research*, 2(1):81-84.
- Kalichman, S., Pellowski, J. and Chen, Y. 2013. Requesting help to understand medical information among people living with HIV and poor health literacy. *AIDS Patient Care and STDs*, 27(6):326-332.
- Li, J., Gilmour, S., Zhang, H., Koyanagi, A. and Shibuya, K. 2012. The epidemiological impact and cost-effectiveness of HIV testing, antiretroviral treatment and harm reduction programs. *AIDS*, 26(16):2069-2078.
- Mbizvo, E.M., Msuya, S.E., Stray-Pedersen, B., Chirenje, M.Z. and Hussain, A. 2005. Cervical dyskaryosis among women with and without HIV: prevalence and risk factors. *International Journal of STD & AIDS*, 16(12):789-793.
- Parham, G.P., Sahasrabudde, V.V., Mwanahamuntu, M.H., Shepherd, B.E., Hicks, M.L., Stringer, E.M. and Vermund, S.H. 2006. Prevalence and predictors of squamous intraepithelial lesions of the cervix in HIV-infected women in Luzaka, Zambia. *Gynecologic Oncology*, 103(3):1017-1022.
- Pudney, J., Quayle, A.J. and Anderson, D.J. 2005. Immunological microenvironments in the human vagina and cervix: mediators of cellular immunity are concentrated in the cervical transformation zone. *Biology of Reproduction*, 73(6):1253-1263.
- Sasco, A.J., Jaquet, A., Boidin, E., Ekouevi, D.K., Thouillot, F., Lemabec, T., Fostin, M.A., Renaudier, P., N'dom, P. and Dabis, F. 2010. The challenge of AIDS-related malignancies in sub-Saharan Africa. *PLoS One*, 5(1):e8621.
- Stuardo, V., Agustí, C., Godínez, J.M., Montoliu, A., Torné, A., Tarrats, A., Alcalde, C., Martín, D., Fernández-Montoli, E., Vanrell, C., Solé, J., Canet, Y., Marqueta, J.M., Mohamed, J., Cuenca, I., Lonca, M., Sirera, G., Ferrer, E., Domingo, P., Lloveras, B., Miro, J.M., Sanjosé, S.D. and Casabona, J. 2012. Women in Catalonia (Spain): implications for prevention of cervical cancer. *PLoS One*, 7(10):e47755.
- Sun, X.W., Ellerbrock, T.V., Lungu, O., Chiasson, M.A., Bush, T.J. and Wright, T.C. Jr. 1995. Human papillomavirus infection in human immunodeficiency virus-seropositive women. *Obstetrics and Gynecology*, 85(5 Pt 1):680-686.
- Tanon, A., Jaquet, A., Ekouevi, D.K., Akakpo, J., Adoubi, I., Diomande, I., Houngbe, F., Zannou, M.D., Sasco, A.J., Eholie, S.P., Dabis, F. and Bissagnene, E. 2012. The spectrum of cancers in West Africa: associations with human immunodeficiency virus. *PLoS One*, 7(10):e48108.
- Williams, B., Amico, K.R. and Konkle-Parker, D. 2011. Qualitative assessment of barriers and facilitators to HIV treatment. *Journal of the Association of Nurses in AIDS Care*, 22(4):307-312.
- World Health Organization (WHO) 2006. Sexual and reproductive health of women living with HIV/AIDS: guidelines on care, treatment and support for women living with HIV/AIDS and their children in resource-constrained settings. Retrieved from <http://www.who.int/hiv/pub/guidelines/rhr/en/index.html> (accessed 22 Dec 2012).

The effects of mindfulness training program on reducing stress and promoting well-being among nurses in critical care units

AUTHORS

Hee Kim Lan

RN, BSc Nsg, MNsc Candidate
Department of Nursing Science, Faculty of Medicine,
University of Malaya, 50603 Kuala Lumpur, Malaysia
heekimlan@siswa.um.edu.com

Norsiah Rahmat

MSN, BSc Nsg, Lecturer
Department of Nursing Science, Faculty of Medicine,
University Malaya, 50603 Kuala Lumpur, Malaysia
norsiahr@um.edu.my

Pathmawathi Subramanian

DHSci, MEd, BSc Nsg, RN, Senior Lecturer
Department of Nursing Science, Faculty of Medicine,
University Malaya, 50603 Kuala Lumpur, Malaysia
pathmawathi@um.edu.my
pathma@ummc.edu.my

Phang Cheng Kar

M.D., MMed(Psych), Senior Medical Lecturer and
Psychiatrist, University Putra Malaysia (UPM)
43400 Serdang Selangor Darul Ehsan, Malaysia
pckar39011@gmail.com

ACKNOWLEDGEMENT

The author thanks the Post Graduate Research Fund (Grant Number: P0013-2012B), University of Malaya and participants.

KEY WORDS

mindfulness, stress, anxiety, well-being, happiness, critical care nurse

ABSTRACT

Objective

This study was conducted to evaluate the effectiveness of a brief mindfulness-based training program in reducing stress and promoting well-being among critical care nurses.

Design

A quasi-experimental, single-group, pre-post study design was used to evaluate the effectiveness of the program.

Setting

This study was conducted in a tertiary referral centre in Malaysia.

Subjects

A non-probability voluntary sample of 41 critical care nurses participated in the program. Thirty seven (90%) completed the program, with at least 80% attendance.

Intervention

The intervention is an adapted and brief version of Mindfulness-based Cognitive Therapy (b-MBCT) using the local promotional name of 'Mindful-Gym'. b-MBCT is a group-based program, carried out for five weeks at two hours per week with practice sessions in between. It was delivered as part of the hospital's continuing nursing education program.

Main outcome measures

Perceived Stress Scale (PSS) and Depression Anxiety Stress Scale (DASS) were used to measure the stress-related outcomes. As for the well-being outcomes, the Mindfulness Attention and Awareness Scale and Subjective Happiness Scale (SHS) were used.

Results

After completing the program, the participants reported significant improvement in the level of perceived stress (PSS: $p < .001$; $r = 0.50$), stress (DASS-S: $p = .002$; $d = 0.56$), anxiety (DASS-A: $p < .001$; $r = 0.38$), depression (DASS-D: $p < .001$; $r = 0.37$), mindfulness (MAAS: $p < .001$; $d = 1.002$), and happiness (SHS: $p = .028$; $d = 0.57$), with a moderate to large effect size.

Conclusion

Results support the effectiveness of b-MBCT in reducing stress and promoting well-being among critical care nurses.

INTRODUCTION

Critical care nurses undergo a lot of stress compared to nurses from other disciplines. The study done by Zainiyah (2011) shows that 33% of the nurses reported having moderate to severe level of stress. Although the working environment of critical care nurses may appear to be more conducive and comfortable as they have a limited number of patients, the expectations regarding patient care and patient outcome are much higher compared to other general nurses (Mealer et al 2007; Poncet et al 2007). This is mainly due to their responsibilities in taking care of critically-ill patients (Donchin et al 1995), the high demands from patients and family members (AbuAl Rub 2004) and the complex use of sophisticated technology (Tahir 2007).

The effect of prolonged, unmanaged stress can have a negative impact on nurses' personal or professional lives, causing physical and psychological changes, such as job stress, anger, anxiety, insecurity, dissatisfaction and frustration (Kawano 2008); decreased productivity (Tahir et al 2007); physical ill health like depression (Makie 2006); and back injuries (Barnett et al 2010). Therefore, there is a need to develop a culturally acceptable mental health program to help nurses cope with excessive stress. A promising program is mindfulness-based training. The concept of mindfulness originates from ancient contemplative traditions, particularly Buddhism. However, since the 1970s, it has been integrated in a secular way for stress reduction, psychotherapy and healthcare.

One of the well-established mindfulness-based interventions is Mindfulness-based Cognitive Therapy (MBCT) (Chiesa and Serretti 2011), which was developed from Mindfulness-based Stress Reduction (MBSR) (Irving et al 2009). MBCT combines mindfulness training and elements of cognitive therapy (CT) in targeting vulnerability processes of maintenance depressive episodes (Keng et al 2011). The aims of CT and MBCT are to teach individuals to become more aware of their thoughts and feelings, and then relate it in a wider, decentred and detached perspective as mental events rather than attach to, or focus on, that negative thought (Phang and Oei 2012; Keng et al 2011; Segal et al 2002).

Both MBSR and MBCT are effective interventions for reducing stress and promoting well-being, either in clinical or non-clinical fields (Gold et al 2010; Penque 2009; Cohen-Katz et al 2005; Shapiro et al 1998). Several studies have also specifically supported the effectiveness of mindfulness-based training in reducing stress, enhancing coping ability, lowering perceived stress and promoting well-being among nurses as shown in table 1.

The definition of mindfulness in research, training and education is evolving; the most popular definition is "paying attention in a particular way; on purpose, in the present moment, and non-judgementally" (Kabat-Zinn 1991, pp. 2). Mindfulness training involves cultivating the ability to be aware of our current thoughts, feelings, bodily sensations with kindness and understanding. It creates a psychological 'space' between one's perception (e.g. stressful stimulus) and response (thoughts, speech and actions). This enables us to *respond* wisely instead of *react* impulsively with negative emotions (Phang and Oei 2012). In other words, mindfulness helps one to mobilise the inner resources to face problems openly, to be aware of and orient oneself to overcome the pressure, and propel oneself through it. It is like a sailor positioning the sail and making use of the pressure of wind to propel the boat (Kabat-Zinn 1991, pp. 3). Therefore mindfulness training is potentially useful in promoting well-being and stress management in the nursing profession.

This study is important as there have been no published studies on structured stress reduction or well-being programs for nurses in Malaysia. The objectives of this study were: a) to determine the level of stress, anxiety and depression among critical care nurses participating in a brief mindfulness training program (b-MBCT), b) to evaluate the effectiveness of b-MBCT in reducing perceived stress, stress, anxiety and depression, and c) to evaluate the effectiveness of b-MBCT in increasing mindfulness and happiness.

Table 1: The summary of studies on mindfulness-based intervention program on nurses

Author	Study design	Sample size	Population	Program	Duration of program	Measures of stress-related outcomes	Measures of well-being related outcomes	Measures with significant improvement
Penque et al 2009	Quasi-experimental, single group, pre and post study	61	Registered nurses	MBSR	8 weeks	-	MAAS, Self-compassion, Empathy	MAAS, Self-compassion
Beth Elisa et al 2007	Qualitative	4	Registered nurses	MBSR	8 weeks, follow-up for 3 month	-	MAAS, Self-development	MAAS
Mackenzie et al 2006	Quasi-experimental with control group	Treatment = 16, Control = 14	Nurses and aides nurses	MBSR/control	4 weeks, follow-up for 1 month	MBI	SWLS	MBI, SWLS
Cohen-Katz et al 2005	Quasi-experimental with control group and qualitative	Treatment = 12, Control = 13	Nurses	MBSR/control	8 weeks, follow-up for 3 months	BSI	MAAS	BSI, MAAS
Pipe et al 2009	Randomised controlled trial	Treatment = 15, Control = 17	Nurse leaders	MBSR/control	4 weeks, follow-up for 1 week	SCL-90-R	CES	SCL-90-R, CES
Shapiro et al 2005	Randomized controlled trial	Treatment = 10, Control = 18	Health care professionals including nurses	MBSR/control	8 weeks, follow-up for 3 months	BSI, PSS	SWLS, Self-compassion	PSS, Self-compassion

MAAS = Mindfulness Attention Awareness Scale; MBI = Maslach Burnout Inventory; SWLS = Satisfaction With Life Scale; SRDI = Smith Relaxation Dispositions Inventory; JSS = Job Satisfaction Scale; BSI = Brief Symptom Inventory; SCL-90-R = Symptom Checklist 90-Revised Subscale; CES = Carling Efficacy Scale; PSS = Perceived Stress Scale.

METHOD

A quasi-experimental, single-group, pre-post study design was used to evaluate the effectiveness of the program. The study was carried out in all the critical care units of a tertiary referral public hospital in Malaysia. A non-probability voluntary sampling was used in this study due to scheduling constraints among the critical care nurses who were on three duty shifts. Self-reported questionnaires on participants' level of stress and well-being related outcomes were administered one week before and after completion of the program.

Participants

Participants were recruited by their ward managers through program flyers and information sheets. All nurses who felt they needed education on stress reduction or promoting well-being were encouraged to join the program. Continuous professional development (CPD) points were awarded and appropriate schedules were arranged to encourage participation.

Based on a quasi-experimental, single group, pre-post study of a similar program among 139 medical students in Malaysia (Phang et al 2013), the sample size required for a similar study ($\alpha = 0.05$, power = 80%, effect size = medium) is 40. The calculation was assisted by a sample size calculation software, "G*Power3" (Faul et al 2007). A total of 41 participants volunteered for the program. It was conducted in two batches; 24 participants in the first batch and 17 participants in the second batch. Only participants who completed at least four out of five sessions of the program (80% attendance) were included in the data analysis (per protocol analysis).

Ethical Considerations

Ethical approval was obtained from the Hospital's Ethical Committee and the National Medical Research Register Committee. All the participants were given a copy of the information sheet and consent for the study was obtained.

Instrument

The following self-report questionnaires were used to evaluate the stress-related outcomes: (a) Perceived Stress Scale (PSS-10) and (b) Depression Anxiety Stress Scale (DASS-21). The PSS-10 is a brief and easy-to-use measurement of the degree of stress in one's life during the last month. It is a 10-item inventory using the Likert Scale, a 5-point scale ranging from 0 (never) to 4 (very often). Item responses for each participant were summed up after reverse scoring four items (4, 5, 7 and 8), yielding a total score of perceived stress ranging from 0 to 40. Higher scores indicate higher levels of perceived stress (Cuneo et al 2011). The coefficient alphas were 0.84, 0.85 and 0.86 (Cohen et al 1983). The DASS-21 is a 21-item questionnaire that was developed by Lovibond (1995) to measure three negative emotional states - stress (DASS-S), anxiety (DASS-A) and depression (DASS-D). The Likert scale ranges from 0 (did not apply to me at all) to 3 (applied to me very much, or most of the time). Each subscale contains 7 items. Each scale summed up 7 relevant items, then multiplied them by 2 to obtain a final total score. The reliability coefficient of DASS-21 ranges from 0.81 to 0.97 (Gold et al 2010; Ramli et al 2009).

To evaluate the well-being related outcomes, two tools were used: (a) Mindfulness Awareness Attention Scale (MAAS-15) and Subjective Happiness Scale (SHS). The MAAS-15 consists of 15 items with a 6-point Likert scale ranging from 1 (almost always) to 6 (almost never). Item responses for each participant were summed up and averaged, yielding a total score of mindfulness ranging from 1 to 6. Higher scores indicate higher levels of mindfulness. The Cronbach alpha ranges from 0.82 to 0.87 (Brown and Ryan 2003). The SHS is a 4-item scale of global subjective happiness to measure whether a person is happy or unhappy. The Cronbach alpha ranged from 0.79 to 0.94 (Lyubomirsky and Lepper 1997).

Intervention

The brief Mindfulness-based Cognitive Therapy (b-MBCT) program was initially adapted from the eight week Mindfulness-based Stress Reduction, MBSR (Kabat-Zinn 2003) and Mindfulness-Based Cognitive Therapy (MBCT) (Segal et al 2002) by a local psychiatrist for use among medical students (Phang et al 2013). The b-MBCT is a group-based, five week program, at two hours per week with practice sessions in between. It was promoted among the nurses as a program for stress reduction and promoting well-being with the educational name, 'Mindful-Gym.' As part of the hospital's continuing nursing education program held in the hospitals' seminar rooms, it was conducted using a didactic and experiential approach.

The b-MBCT trainer was a consultant psychiatrist with training in cognitive behavioural therapy, mindfulness-based interventions and personal mindfulness practice. The slogan of the program was 'Be Present, Be Calm and Be Grateful'. Consistent with the slogan, various exercises (see table 2 for program outline) were introduced during the program to foster the ability to be present, calm and grateful – all positive mental states that are related to mindfulness. As part of the training, each participant was also given an audio compact disc and booklet to guide them during practice sessions (5-10 minutes per day). Typically, each week's two hour session would start off with sharing and discussion (fine tuning of technique and customisation for daily application) on the in between practice sessions (e.g. body scan). This would be followed by the introduction of new lessons and exercises for the week.

Table 2: The outline of b-MBCT program

Week 1	ABC of stress, introduction to mindfulness. Mindful stretching, muscle relaxation and 'NOW-ing' (labelling physical actions).
Week 2	Beginner's mind, deep and mindful breathing. Mindful imagery, mindfulness theme song.
Week 3	Gratitude workout (cultivating grateful thinking). Mindful-S.T.O.P.*
Week 4	Body scan and kindness. Mind-scan – mindfulness of thinking errors.
Week 5	Heart-scan (cultivating loving-kindness). MP3 - Mindfulness personal practice package (customizing mindfulness practice)

*'Mindful-S.T.O.P.' is an acronym for brief informal mindfulness practice (S – Stop, T – Take deep and/or mindful breaths, O – Observe surrounding sounds, P – Proceed with activities with a smile).

Data analysis

Data was analysed using Social Package Statistical Software (SPSS) version 21 (IBM Corp. Released 2010). Descriptive and inferential statistics were used after normality test.

Findings

Out of 41 participants, 37 participants (90%) completed the b-MBSR program with at least 80% attendance; 22 (60%) completed 5 sessions and 15 (40%) completed 4 sessions. Four participants did not complete the sessions due to personal problems. All of the participants were female, with 35 (95%) Malays, 2 Indians and no Chinese. The mean age was 29.19 ± 5.35 . The other demographic characteristics are shown in table 3.

Table 3: Demographic characteristics of participants

Variable	Total (n = 37); f (%)
Age	Mean = 29.19 (SD = 5.4)
Years of nursing experience	Mean = 6.03 (SD = 4.8)
Marital status	
Married	26 (70.3)
Single	11 (29.7)
Post basic training	
Yes	11 (29.7)
No	26 (70.3)
Current critical care unit	
CCU	6 (16.2)
CICU	9 (24.3)
ICU	12 (32.4)
NICU	8 (21.6)
CHDW	2 (5.4)

CCU= Coronary Care Unit; CICU= Cardiac Intensive Care Unit;

ICU= Intensive Care Unit; NICU= Neonate Intensive Care Unit;

CHDW= Cardiac High Dependency Ward.

Baseline of psychological distress level

In the assessment of the participants' baseline stress level using DASS-S, 16 (43%) reported having mild to severe stress levels. From the DASS-A, 30 (82%) of them were found to have mild to severe anxiety levels, while 15 (40%) were rated as having mild to severe depression as shown in table 4. This showed the participants' levels of stress, anxiety and depression were high before attending the b-MBCT.

Table 4: Level of stress, anxiety and depression before b-MBCT

	Normal f (%)	Mild f (%)	Moderate f (%)	Severe f (%)	Extremely severe f (%)
DASS-S	21 (56.8)	8 (21.6)	4 (10.8)	2 (5.4)	0
DASS-A	7 (18.9)	4 (10.8)	17 (45.9)	6 (16.2)	3 (8.1)
DASS-D	22 (59.5)	8 (21.6)	4 (10.8)	3 (8.1)	0

DASS = Depression Anxiety Stress Scale.

The effect of b-MBCT on stress-related outcome

Table 5: shows the paired-sample t test that was conducted on pre- and post- intervention scores of stress level. It showed a significant decrease in participants' stress level with a mean difference of 3.14; $p = .002$ after attending b-MBCT.

Table 5: Level of stress before and after b-MBCT

Measure	Pre-intervention		Post-Intervention		Pre-post difference		t	Sig. (p)	Effect size (d)
	Mean	SD	Mean	SD	Mean	SD			
DASS – S	14.65	6.17	11.51	5.02	3.14	5.75	-3.32	.002	0.56

DASS-S = Depression Anxiety Stress Scale (stress subscale).

As for the PSS, DASS-A and DASS-D, Wilcoxon-rank test was conducted to evaluate the effectiveness of b-MBCT. Results showed significantly lower perceived stress levels with a median difference of 2, $p < .001$; decreased anxiety levels with a median difference of 4, $p = .001$ and decreased depression level with a median difference of 2, $p = .001$.

Table 6: Level of perceived stress, anxiety, and depression before and after b-MBCT

Measure	Pre-intervention		Post-intervention		Pre-post difference		z	Sig. (p)	Effect size (r)
	Median	Interquartile rank	Median	Interquartile range	Median	Interquartile range			
PSS	20.00	4.00	17.00	4.50	3	5	-4.14	<.001	0.50
DASS -A	12.00	7.00	8.00	8.00	4	6	-3.23	.001	0.38
DASS- D	8.00	7.00	6.00	4.00	2	4	-3.18	.001	0.37

PSS = Perceived Stress Scale; DASS-A = Depression Anxiety Stress Scale (anxiety subscale); DASS-D = Depression Anxiety Stress Scale (depression subscale).

The effect of b-MBCT on wellness-related outcome

Table 7 shows the paired-sample *t* test results of the participants' mean score after attending b-MBCT. The participants' mindfulness level had increased significantly with a mean score of 0.56, $p < .001$; and the subjective happiness level improved with mean scores of 1.57, $p = .028$, after attending the b-MBCT program.

Table 7: Level of mindfulness and subjective happiness before and after b-MBCT

Measure	Pre-intervention		Post-intervention		Pre-post difference		t	Sig. (p)	Effect size(d)
	Mean	SD	Mean	SD	Mean	SD			
MAAS	4.08	0.55	4.64	0.58	0.56	0.56	-6.10	< .001	1.002
SHS	19.46	3.35	20.49	2.91	1.57	2.77	-3.44	.028	0.6

MAAS = Mindful Attention Awareness Scale; SHS = Subjective Happiness Scale. Table 6: Level of perceived stress, anxiety, and depression before and after b-MBCT

DISCUSSION

Demographic Characteristics

The majority of the participants in this b-MBCT program were Malays (95%); all the previous mindfulness-based intervention studies for nurses were carried out among Caucasians. This is of great significance as it implies that mindfulness-based training is culturally acceptable among the Malays, the majority of whom are Muslims. As the concept of mindfulness mainly originates from Buddhism and is related to meditation (Keng et al 2011), there were concerns that it would not be acceptable and useful in a multi-ethnic society like Malaysia. This study resolved those concerns and reinforced the belief that mindfulness training, as shown in numerous Western studies, can be successfully applied in a secular setting and adapted to different cultures. In fact, there has been growing interest in mindfulness among the Malays in Malaysia. For example, the Malaysian Institute of Islamic Studies (IKIM) has been organising talks and workshops on mindfulness from an Islamic perspective (e.g. applying mindfulness in daily prayers) since 2008 (IKIM 2013). All these developments provide evidence that mindfulness-based interventions are potentially useful in a Malaysian setting.

Effectiveness of the b-MBCT

Findings show the baseline levels of mild to very severe stress, anxiety and depression among critical care nurses in this tertiary hospital were 44%, 82% and 40%, respectively. The baseline shows high stress, anxiety and depression levels.

Findings show that 43%, 82% and 40% of the critical care nurses had increased level of stress, anxiety and depression (i.e. mild to very severe level), respectively. After attending the b-MBCT program, the participants with increased levels of stress, anxiety and depression significantly decreased to 8%, 51% and 19%, respectively.

These indicated that b-MBCT is significantly effective in reducing the participants' stress-related outcomes in terms of stress, anxiety and depression levels; and in lowering the perceived stress levels. These results are similar to that of Pipe et al (2009) and Mackenzie's (2006) study on nurses, as well as Phang et al (2013) studies on local medical students.

The findings also showed significant improvement in participants' well-being-related outcomes, in terms of mindfulness and subjective happiness levels after attending the b-MBCT. This indicates that b-MBCT is an effective program for increasing mindfulness and happiness. These findings are in agreement with Penque (2009), Cohen Katz (2005) and Mackenzie's (2006) studies on nurses. This study's results are also similar to that of Phang et al (2013) studies on medical students using the same program and instructor. This further strengthens that b-MBCT is effective in reducing stress and improving well-being.

Five mindfulness-based intervention studies on nurses have been conducted abroad as shown in table 1. However, not all the studies measured stress-related and wellness-related outcomes to evaluate the effectiveness of their program. The present study measured both outcomes, suggesting that b-MBCT is a more structured program which can be practiced by nurses as a stress management strategy.

Contributing factors in enhancing the effectiveness of b-MBSR

In this study the compliance rate of attendance was 90%, where the participants completed at least four out of five sessions of b-MBCT. This was an improvement on Penque's (2009) study on nurses and Phang et al (2013) study on medical students, which had compliance rates of 75% and 69.2%, respectively.

This indicates the participants of this study were interested in attending the program even though they were busy juggling three shifts, were tired and had to balance their personal lives as well. There were various factors that contributed to the effectiveness of the b-MBSR program, such as:

- 1) duration of present b-MBCT was shortened to a five week mindfulness training session, putting fewer demands on nurses who already have to juggle a three shift work schedule and their family responsibilities. Out of the 5 MBSR studies on nurses only one study used the four week program, while the rest used the eight week program as shown in table 1. Although shortened, the positive outcomes were not significantly different between these studies;
- 2) the use of the Mindful-S.T.O.P approach, which is a shorter and more practical form of mindfulness meditation practice (can be practiced in 1, 3, 5 or 10 minutes depending on availability of time), compared to most of the previous studies which used 30 to 45 minutes of sitting or walking meditation;
- 3) the program was promoted as a wellness program instead of a mental health program (the word 'mental' somehow generates unnecessary social stigma). In view that many of the nurses had significant level of psychological distress, it would be a good strategy to integrate the program into the existing hospital continuous professional development (CPD) program. This is better than sending them for individual psychiatric or counselling sessions, which nurses are more likely to avoid due to the stigma of psychiatric issues; and
- 4) the instructor's experience and expertise further enhanced the participants' attendance. The instructor had conducted more than fifteen batches of similar trainings in Malaysia, and has personal mindfulness practice which is essential for quality experiential training.

The contributing factors above were strongly supported by Carmody and Baer (2009), who concluded that there is no correlation between the compliance rate and the number of class hours. The most important factor is to gain a better participation rate to practice the technique.

Limitation

The limitations of the present study were: 1) no control group, 2) no follow-up, 3) self-fulfilling effect in answering questionnaires, 4) no measures on productivity and patient-related outcomes, and 5) no measures on compliance with practice sessions.

RECOMMENDATION

A randomised controlled trial with follow-up is suggested to further examine the generalisability of the results for well-being and stress management. A study on the effect of mindfulness on nurses' work performance; as well as on patient and nurses' satisfaction or patient outcome, should be carried out to further support the evidence for the effectiveness of the b-MBCT program on nurses. MBCT should be promoted and internalised as part of the hospital's strategy to reduce stress and manage well-being among nursing staff and should also be integrated in nursing co-curriculum.

CONCLUSION

In conclusion, the study findings showed that the b-MBCT is effective in reducing stress and promoting well-being, and is feasible to be practised among critical care nurses.

REFERENCES

- AbuAl Rub, R.F. (2004). Job stress, job performance, and social support among hospital nurses. *Journal of Nursing Scholarship*, 36(1)73-78.
- Barnett, T., Namasivayam, P. and Narudin, D. (2010). A critical review of the nursing shortage in Malaysia. *International nursing review*, 57(1)32-39.
- BethElisa, R. (2007). Registered nurses practicing mindfulness: the lived experience. Wisconsin, Marian College of Fond Du Lac.
- Brown, K.W. and Ryan, R.M. (2003). The benefits of being present: mindfulness and its role in psychological well-being. *Journal of personality and social psychology* 84(4):822.
- Carmody, J. and Baer, R.A. (2009). How long does a mindfulness-based stress reduction program need to be? A review of class contact hours and effect sizes for psychological distress. *Journal of clinical psychology* 65(6):627-638.
- Chiesa, A.A. and Serretti, A.A. (2011). Mindfulness based cognitive therapy for psychiatric disorders: a systematic review and meta-analysis. *Psychiatry Research* 187(3):441-453.
- Cohen-Katz, J., Wiley, S., Capuano, T., Baker, D. and Shapiro, S. (2005). The Effects of Mindfulness-based Stress Reduction on Nurse Stress and Burnout, Part II: A Quantitative and Qualitative Study. *Holistic Nursing Practice* January/February, 19(1):26-35.
- Cohen, S., Kamarck, T. and Mermelstein, R. (1983). A global measure of perceived stress. *Journal of health and social behavior*, 24(12):385-396.
- Cuneo, C.L., Cooper, M.R.C., Drew, C.S., Naoum-Heffernan, C., Sherman, T., Walz, K. and Weinberg, J. (2011). The effect of Reiki on work-related stress of the registered nurse. *Journal of Holistic Nursing*, 29(1):33-43.
- Donchin, Y., Gopher, D., Olin, M., Badihi, Y., Biesky, M. R., Sprung, C. L. and Cotev, S. (1995). A look into the nature and causes of human errors in the intensive care unit. *Critical care medicine*, 23(2):294-300.
- Faul, F., Erdfelder, E., Lang, A.-G. and Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39(2):175–191.
- Gold, E., Smith, A., Hopper, I., Herne, D., Tansey, G. and Hulland, C. (2010). Mindfulness-based stress reduction (MBSR) for primary school teachers. *Journal of Child and Family Studies*, 19(2):184-189.
- IBM Corp. Released 2010. IBM SPSS Statistics for Window, Version 21.0. Armonk, NY: IBM Corp
- IKIM. (2013). Stress Management, http://www.ikim.gov.my/file/program_ikim_2013.pdf. Retrieved 29.5.2013
- Irving, J.A., Dobkin, P.L. and Park, J. (2009). Cultivating mindfulness in health care professionals: A review of empirical studies of mindfulness-based stress reduction (MBSR). *Complementary Therapies in Clinical Practice*, 15(2):61-66.
- Kabat-Zinn, J. (1991). *Full Catastrophe Living : Using the Wisdom of Your Body and Mind to Face Stress, Pain and Illness*. New York, Bantam Doubleday Dell Publishing Group, Inc.
- Kabat-Zinn, J. (2003). "Mindfulness-Based Interventions in Context: Past, Present, and Future." *Clinical Psychology: Science And Practice* 10(2):144-156.
- Kawano, Y. (2008). "Association of job-related stress factors with psychological and somatic symptoms among Japanese hospital nurses: effect of departmental environment in acute care hospitals." *Journal of occupational health* 50(1):79-85.

- Keng, S.L., Smoski, M.J. and Robins, C.J. (2011). Effects of mindfulness on psychological health: A review of empirical studies. *Clinical psychology review*, 31(6):1041-1056.
- Lovibond, S.H. (1995). *Manual for the Depression Anxiety Stress Scale*. Sydney, Psychology Foundation.
- Lyubomirsky, S. and Lepper, H.S. (1997). "A measure of subjective happiness: preliminary reliability and construt validation." *Social Indicators Research* 46:137-155.
- Mackenzie, C.S., Poulin, P.A. and Seidman-Carlson, R. (2006). A brief mindfulness-based stress reduction intervention for nurses and nurse aides. [Randomized Controlled Trial]. *Applied nursing research : ANR*, 19(2):105-109.
- Makie, V.V. (2006). *Stress and Coping Strategies amongst Registered Nurses Working in a South African Tertiary Hospital University of the Western Cape*.
- Mealer, M.L., Shelton, A., Berg, B., Rothbaum, B. and Moss, M. (2007). Increased prevalence of post-traumatic stress disorder symptoms in critical care nurses. *American Journal of Respiratory and Critical Care Medicine*, 175(7):693-697.
- Penque, S. (2009). *Mindfulness Based Stress Reduction Effect on Registered Nurses*. Minnesota, University of Minnesota: 129.
- Phang, C.K., Chiang, K.S., Ng, L.O. and Oei, T.P.S. (2013). The Effectiveness of Brief Mindfulness-based Cognitive Behavioral Therapy Program for Stress Reduction among Medical Students in a Malaysia University. *International Mindfulness Conference, Rome, Italy*.
- Phang, C.K. and Oei, T.P.S. (2012). "From Mindfulness to Meta-mindfulness: Further Integration of Meta-mindfulness Concept and Strategies into Cognitive-Behavioral Therapy." *Mindfulness*: 1-13.
- Pipe, T.B., Bortz, J.J., Dueck, A., Pendergast, D., Buchda, V. and Summers, J. (2009). Nurse leader mindfulness meditation program for stress management: a randomized controlled trial. *Journal of nursing administration*, 39(3):130-137.
- Poncet, M.C., Toullic, P., Papazian, L., Kentish-Barnes, N., Timsit, J.F., Pochard, F. and Azoulay, E. (2007). Burnout syndrome in critical care nursing staff. *American Journal of Respiratory and Critical Care Medicine*, 175(7):698-704.
- Ramli M, Salmiah M.A, Nurul Ain M. (2010). Validation and psychometric properties of Bahasa Malaysia version of the Depression Anxiety and Stress Scales (DASS) among diabetic patients. *Malaysian Journal of Psychiatry*, 18(2).
- Segal, Z.V., Teasdale, J.D., Williams, J.M. and Gemar, M.C. (2002). The mindfulness-based cognitive therapy adherence scale: inter-rater reliability, adherence to protocol and treatment distinctiveness. *Clinical Psychology and Psychotherapy*, 9(2):131-138.
- Shapiro, S.L., Schwartz, G.E. and Bonner, G. (1998). Effects of mindfulness-based stress reduction on medical and premedical students. *Journal of behavioral medicine*, 21(6):581-599.
- Shapiro, S.L., Astin, J.A., Bishop, S.R. and Cordova, M. (2005). Mindfulness-based stress reduction for health care professionals: Results from a randomized trial. *International Journal of Stress Management*, 12(2):164-176.
- Tahir, S., Santhna, L. and Nizam, M. (2007). Prevalence of Stress and coping mechanism among staff Nurses in the intensive care unit. *Medicine and Health*, 2(2):146-153.
- Zainiyah, S., Yahya, S., IM, A. and Chow, C.Y. (2011). Stress and its associated factors amongst ward nurses in a public hospital Kuala Lumpur. *Malaysian Journal of Public Health Medicine*, 11(1):78-85.

Overseas qualified nurses in Australia: reflecting on the issue

AUTHORS

Grazyna Stankiewicz

RN, MN, PhD, MACN, GCAP, Lecturer
School of Nursing and Midwifery,
Faculty of Medicine, Nursing and Health Sciences,
Monash University, Peninsula Campus
PO Box 527, Frankston, Victoria, Australia
grace.stankiewicz@monash.edu

Margaret O'Connor AM

DN (La Trobe), MN (RMIT), B.Theol (Melb) RN, FRCNA,
MAICD
Vivian Bullwinkel Chair in Palliative Care Nursing
RN, DN MN, B.Theol Professor
Palliative Care Research Team
School of Nursing and Midwifery, Faculty of Medicine,
Nursing and Health Sciences, Monash University,
Peninsula Campus, PO Box 527, Frankston, Victoria,
Australia
margaret.oconnor@monash.edu

KEY WORDS

Overseas qualified nurses, migration, adjustment

ABSTRACT

Objective

The migration of international nurses is a growing phenomenon and will continue in response to global nursing shortages. Historically, nursing has been depicted as a 'portable' profession, or one which enables individuals to move across inter/national borders. This 'portability' of nursing is supporting skilled nurse migration around the world. However, nursing practices learned by Overseas Qualified Nurses (OQN) in their home countries may differ to the role and expectations of the new country in relation to scope of practice, professional and legal environment, accountability, professional autonomy, health care technology and inter-professional relationships.

Primary argument

Relatively little is known about the experiences of OQN in Australia and particularly, about those from non-English speaking backgrounds. Supported by international literature and personal experiences, this paper describes the adaptation process and challenges faced by OQN in beginning a new life in Australia.

Conclusion

Australia, like many other developed countries, is facing an ageing population and an ageing health workforce, including nurses. The global shortage of nurses in many countries, including Australia, means that OQN will continue to be a significant part of the workforce. As the welcoming country, Australia can benefit from hosting OQN and these nurses in return contribute to the enrichment of Australian life.

INTRODUCTION

Over recent years, the provision of healthcare in countries around the world has faced a range of pressures as it seeks to address new demands and expectations, often in the context of a constrained or shrinking resource base. Often these pressures have concentrated on the structure and nature of the nursing workforce; how might this workforce be efficiently and effectively developed, organised and managed, to meet upcoming challenges (Xu and He 2012; Smith et al 2011; Ohr et al 2009; Xu 2007). A major driver for nursing mobility is the chronic and severe global shortage of registered nurses (RNs) in many countries, not just Australia. The reasons for emigration of OQN are many and not necessarily related to the nursing profession. For example, the main author of this publication emigrated for personal and family reasons.

According to Bieski, (2007), in the United States of America (USA) ...'foreign recruitment is not a permanent solution for the escalating international shortage of nurses' (p.23) as predicted nurses shortfall in 2020 will reach 808,500. The migration of nurses in United Kingdom was initially presented as 'a quick fix' to solve the acute nursing shortage, but over time has become an essential and periodic strategy in the overall nurse recruitment policy (Yunxian 2010; Ohr et al 2009). Employment of OQN in the USA accounted for nearly one-third of the total growth of RN employment (Buerhaus et al 2004).

Australia, like many other developed countries, is facing an ageing population and according to the Australian Bureau of Statistics (ABS), 13.5 per cent of Australians were 64 years old and older (ABS, 2010). Ageing, together with increases in chronic diseases and longer life expectancy, is creating more consumer demand for health care and requires comprehensive involvement of different health professionals, especially nurses (Ohr et al 2009).

The nursing profession is the largest single health profession, making up over half of the total Australian healthcare workforce (Ohr et al, 2009). This workforce is also ageing, with 38.6 per cent of nurses aged 50 years or older in 2011 (Australian Institute of Health and Welfare (AIHW) 2013). The Australian health care workforce has benefited from increased migration of nurses over the last few decades and increasing the nursing workforce through migration, is expected to continue.

The reasons for health workforce shortages in Australia are many and complex, but a crisis in attraction and retention of nurses is likely to exacerbate the current nurses' shortage (Rezaei-Adaryani et al 2012; Toh et al 2012; Bieski 2007). In Australia this crisis has been labelled as the worst nursing shortage in the last 50 years, as it is estimated there will be a shortfall of around 31,000 nurses by 2062 (Holland et al 2012). The lack of retention of nursing numbers is due to retirement; a lack of recognition and/or job satisfaction; job reorientation; and/or burnout (Happell et al 2012; Rezaei-Adaryani et al 2012; Toh et al 2012; Smith et al 2011). According to Holland et al (2012), 38 per cent of nurses reported experiencing high or very high levels of burnout as a result of their work. Shift work and decreases in the average length of stay of patients in hospital, are creating increasing pressure on nurses. Increased workloads and patient ratios, together with a fall in the average number of hours worked by nurses per week, is further contributing to this crisis (Holland et al 2012; Ohr et al 2009).

Utilising the literature and personal experience of the first author, this paper describes the challenges related to being OQN. The migration literature is dominated by issues of accumulation, assimilation and integration of OQN (Ohr et al 2009; Berry 2005; Martin 2005) and describes 'reconciling' migration as a dynamic, ongoing and nonlinear process (Yunxian 2010), or transition (Higginbottom 2011; Xu 2010). The significance of language, culture and practice differences are the key issues of adjustment for immigrant nurses (Terry et al 2013; Xu 2010; Yunxian 2010; Ohr et al 2009; Sherman and Eggenberger 2008; Bieski 2007; Konno 2006).

THE EXPERIENCE OF MIGRATION

The migration of international nurses is a growing phenomenon (Xu 2010; Yunxian 2010; Sherman and Eggenberger 2008; Xu 2007). However, relatively little is known about the experiences of OQN's in Australia and particularly, about those from non-English speaking or linguistically diverse backgrounds (Ohr et al 2009; Brunero et al 2008; Xu, 2007).

The Australian Nursing and Midwifery Accreditation Council holds the authority for the Department of Immigration and Citizenship to assess the eligibility of OQN's for migration; however it does not grant nurses a licence to work (Smith et al 2011; ANMC 2009a, 2009b, 2008). The Nursing and Midwifery Board of Australia (NMBA) is responsible for processing registration applications (Smith et al 2011) and OQN's with intention to register need to comply with documentation and processes. To be eligible to register, OQN's seeking to practice must satisfy five criteria determined by the NMBA. These criteria require the applicant to: establish identity, meet current English language proficiency standards, meet current Australian nursing education standards, provide evidence of recent nursing practice and provide evidence of 'fitness to practice' nursing in Australia (ANMC 2013, 2009a, 2009b, 2008). The applicant's qualifications are assessed against the ANMAC standards, the applicant being notified of the determination of the process and informed of the review process if they wish to appeal the determination of the assessment (ANMC 2009a, 2009b, 2008).

OQN's are required to participate in transition programs before official registration (Xu and He 2012; ANMC 2013, 2009a, 2009b, 2008). To become a registered nurse on arrival in Australia, the first author attended specific courses such as the Preparatory Course for OQN's; the Occupational English Test (OET); and the Preregistration Course, which included academic (undertaken in a university) and supervised practice components (undertaken in private hospital). Despite these regulatory developments however, the transition process remains a highly personal journey for an individual OQN. For the first author, this process took two years and included much frustration about lengthy delays and missed deadlines for enrolment in courses. However, all this preparation for work was insufficient and further clinical adaptation continued in an acute setting, under the supervision of an allocated preceptor (Bieski 2007; Konno 2006).

Commonly, the reason for immigration is an aspiration to live and work in a more economically developed country, although personal/family reasons and even religious or political reasons may contribute to the desire to work in Australia (Ohr et al 2009; Xu, 2007; Mejia et al 1979; Lewis, 1954). Other reasons for a nurse's decision to migrate include a wish to travel or seek new adventures and new experiences, or new training or employment opportunities when these are limited in their home country. Nurses also seek to work in countries that offer improved working conditions and the chance to utilise English language skills. For many, the opportunity to meet personal and professional ambitions could be achieved by the decision to immigrate to a country with a different culture, both in and outside the workplace (Xu 2010; Ohr et al 2009; Sherman and Eggenberger 2008; Xu 2007; Kline 2003).

Globalisation, together with the rising integration of labour markets worldwide, is facilitating factors in increasing immigration. Communication, transport and information technology developments make transmission of information faster, long distance travel more affordable and thus the experience of immigration can be less isolating (Xu 2010; Ohr et al 2009; Martin 2005).

An increasing awareness of the need to internationalise nursing higher education is pivotal for learning flexibility in working with different cultures and contexts. However, besides the obvious language barriers, there are difficulties in learning and knowledge transfer, in both social and professional recognition (Terry et al 2013; Xu and He 2012; Xu 2010; Ohr et al 2009; Brunero et al 2008; Xu 2007). The harmonisation of academic degrees between countries, especially those like nursing with an internationally mobile workforce,

would permit further mobility between countries, from the source country to the country of destination (Xu 2010; Xu 2007; Kline 2003).

For all nurses who immigrate, the decision to do so is complex, needs to be well informed and made in consideration of the possibility of exposure to a number of challenges (Xu 2010; Sherman and Eggenberger 2008; Walters 2008;). The process itself may be very challenging, as it also means beginning a new life and dealing with a new country, a new language, culture, lifestyle and values which can be overwhelming (Walters 2012; Berry 2005). In particular, when work begins in the new country, many factors affect the nurse's perception of success, such as whether their new work experiences are positive, with respect to their self-confidence, competence and professional skills, all of which will impact on how they cope with the overall challenge (Terry et al 2013; Xu and He 2012; Yunxian 2010; Xu 2010; Walters 2008; Bieski 2007; Konno 2006).

ADJUSTMENT

There are two main strategies related to the individual who is engaged in the process of adjustment to a new environment: rational thinking and behaviour change (Yunxian 2010; Konno 2006). The process of *rationalising* is an individual experience and takes place over a period of time (Yunxian 2010; Sherman and Eggenberger 2008; Konno 2006); it is related to reframing the meaning of expectations in comparison to a new reality. In the process of adjustment, the individual closes the gap between what was expected and the new reality. *Behaviour change* is dependent on the situation and involves willingness to acknowledge and accept differences and has a more personal than professional character (Sherman and Eggenberger 2008). These processes (rationalising and behaviour change) together enable the person to change. Both challenge the person and lead to individual discoveries like new potential, their capacity for adaptation, energy for change, levels of determination and readiness to learn new pathways. These experiences may be very rewarding for the individual, making them more receptive to the differences and more respectful of the values of the new culture.

From a policy perspective, the adjustment of OQN is a regulatory issue (Xu 2010). Additional to evidence-based and standardised transition programs is the major transition which occurs inside the individual, for example in 'unlearning' previous professional pathways (Higginbottom 2011; Xu 2010). According to the literature only three major destination countries, the United Kingdom, New Zealand and Australia, currently have compulsory transition programs for OQN (Xu 2010). All of them support the standardisation processes occurring in the USA (Xu and He 2012; ANMC 2009b).

Indeed, the adaptation of OQN to different realities is a complex social and psychological process. While physical immigration, (that is, taking one's body to a new country), is a relatively short term event, social and psychological immigration is a separate and long term process (Yunxian 2010). Phases in the accommodation process involve a growing awareness of the disparities between different realities, when the individual realises their existence; and an ongoing struggle associated with experiencing the 'position in the middle' (between two cultures) and 'to being different' (Xu 2010; Brunero et al 2008; Konno 2006). Adjustment to a new environment then is a lengthy process and one which is never totally complete; for many, it is ultimately an experience of living day to day (Xu and He 2012; Xu 2010; Walters 2008; Berry 2005).

IMPLICATIONS FOR PRACTICE SETTINGS

Understanding adjustment processes may assist health services in developing adaptation programs to assist OQN in transition (Terry et al 2013; Crawford and Candlin 2012; Higginbottom 2011; Xu 2010; Brunero et al

2008; Konno 2006). These transition programs would benefit from engaging OQN's already in employment in the preparation of the programs.

In order to support the OQN, timely access to realistic information about life in a new country after migration and information about support services, will make the transition easier (Higginbottom 2011). Because the process of adjustment is ongoing, OQN may benefit from utilising reflective skills in both their professional and personal life, to assist them in their new environment (Xu 2007).

A distinctive cause of slower adaptation of OQN is insufficient information provided prior to arrival (Xu 2010; Brunero et al 2008; Xu 2007). Therefore, pre-arrival planning and logistical support of OQN is to be encouraged and should be provided by the recruiting institution (Ohr et al 2009; Brunero et al 2008; Walters 2008; Bieski 2007; Xu 2007; Berry 2005). The immediate period after arrival is pivotal in making OQN feel at home and welcomed (Xu 2010; Xu 2007). Furthermore, explicit and clear communication is required between employers and recruitment agencies to avoid employment contract misunderstandings and to facilitate interpretation of the particular credentialing process (Higginbottom 2011; Yunxian 2010; Ohr et al 2009; Walters 2008; Xu 2007).

Arriving from overseas, a migrating nurse has to have the willingness to help themselves, based on their determination to adjust to Australian culture. To allow immigrant nurses to assimilate to the Australian culture adequate time should be given (Higginbottom 2011; Smith et al 2011; Yunxian 2010; Brunero et al 2008; Konno 2006; Berry 2005). There is limited evidence on how long it takes for OQN's to successfully adjust to both foreign social and professional environments, mainly because of the complexities of compounding factors; however, it is commonly suggested that 12 months is the optimal time for the didactic and clinical part of transition (Xu 2010; Konno 2006).

A welcome from local nurses and the health care facility, as well as an inclusive ward team, will assist in reducing the ambivalence that OQN's will undoubtedly carry with them. To facilitate the mutual exchange of information and shared experiences among nurses, the establishment of an Overseas Qualified Nurses Association (OQNA) in Australia maybe helpful. Australian health care providers could further develop, establish and implement support services, including transition and workplace orientation programs targeting OQN, consistent preceptor ship and support programs for OQN's families (Higginbottom 2011; Xu 2010; Xu 2007).

Establishing these supports may be cost-effective, in reducing adjustment time, increasing inclusiveness and integration. Furthermore, support of the OQN will enhance their self-confidence and therefore decrease attrition. These measures will move Australia forward in promoting an inclusive culture which values, rather than eliminates diversity (Ohr et al 2009; Brunero et al 2008). Understanding the support needs of OQN's by host nurses will assist the adjustment process.

CONCLUSION

Like many other developed countries, Australia is facing an ageing population and an ageing health workforce, including nurses. The global shortage of nurses in many countries, including Australia, means that OQN's will continue to be a significant part of the workforce. This paper has described aspects of the OQN immigration experience, drawing on the literature and personal experience of the first author. This author has enjoyed a positive experience of working in a clinical setting as well as an academic environment, finding many challenges along the way, but ultimately appreciating the journey to finding her new home. As the welcoming country, Australia can benefit from hosting OQN's and these nurses in return contribute to the enrichment of Australian life.

References

- Australian Bureau of Statistics (2010). Retrieved 21/01/2013 from www.abs.org.au
- Australian Institute of Health and Welfare, (2013) Retrieved 2/03/2013 from www.aihw.org.au
- Australian Nursing and Midwifery Council (ANMC), (2008). English Language Proficiency for Internationally Educated Nurses and Midwives, Canberra: Australian Nursing and Midwifery Council. Retrieved 13/01/2013 from <http://www.anmc.org.au>
- Australian Nursing and Midwifery Council (ANMC), (2009a). Standards for Assessment of Nurses and Midwives for Migration Purposes, Canberra: Australian Nursing and Midwifery Council. Retrieved 14/01/2013 from <http://www.anmc.org.au>
- Australian Nursing and Midwifery Council (ANMC), (2009b). Final Report: Development of the National Standards for the Assessment of Internationally Qualified Nurses and Midwives for Registration and Migration. Canberra: Australian Nursing and Midwifery Council. Retrieved 14/01/2013 from <http://www.anmc.org.au>
- Australian Nursing and Midwifery Accreditation Council (ANMAC), (2013). Accreditation standards- entry program for internationally qualified - registered nurses - 2013 (draft). Retrieved 17/03/2013 from <http://www.anmc.org.au>
- Bieski, T. (2007). Foreign-Educated Nurses: An Overview of Migration and Credentialing Issues. *Nursing Economic*, 25(1):20-24
- Buerhaus, P.I., Staiger, D.O. and Auerbach, D.I. (2004). New signs of a strengthening US nurse labour market? *Health Affairs*, 23(6):525-533
- Berry, J.W. (2005). Acculturation: Living successfully in two cultures. *International Journal of Intercultural Relations*, 29(6):697-712
- Brunero, S., Smith, J. and Bates, E. (2008). Expectations and experiences of recently recruited overseas qualified nurses in Australia. *Contemporary Nurse*, 28(1-2):101-110
- Crawford, T. and Candlin, S. (2012). A literature review of the language needs of nursing students who have English as a second/other language and the effectiveness of English language support programs. *Nurse Education in Practice*, 13: 181-185
- Happell, B., Dares, G., Russell, A., Cokell, S., Platania-Phung, C. and Gaskin, C.J. (2012). The Relationship between Attitudes toward Seclusion and Levels of Burnout, Staff Satisfaction and Therapeutic Optimism in District Health Service. *Issues in Medical Health Nursing*, 33:329-336
- Higginbottom, G.M. (2011). The transitioning experiences of internationally educated nurses into Canadian health care system: A focused ethnography. *BioMed Central (BMC) Nursing*, 10:14
- Holland, P., Allen, B.C. and Cooper, B.K. (2012). What Nurses Want: Analysis of the First National Survey on Nurses' Attitudes to Work and Working Conditions in Australia. Department of Management, Monash University, February 2012
- Kline, D.S. (2003). Push and pull factors in international nurse migration. *Journal of Nursing Scholarship*, 35(2): 107-111
- Konno, R. (2006). Support for overseas qualified nurses in adjusting to Australian nursing practice: a systematic review. *International Journal of Evidence-Based Healthcare*, the Joanna Briggs Institute, 4:83-100
- Lewis, W.A. (1954). Economic development with unlimited supply of labour. *The Manchester School of Economic and Social Studies*. 22(2): 139-191
- Martin, S. (2005). Migration, development and population: Prepared for the David and Lucile Packard Foundation Population Program Review Task Force, August 2005. Retrieved 21/01/2013 from http://www.packard.org/assets/files/population/program%20review/pop_rev_martin.pdf
- Mejia, A., Pizurki, H. and Royston, E. (1979). Physician and nurse migration: Analysis and policy implications. Geneva, Switzerland: World Health Organisation
- Ohr, S.O., Parker, V., Jeong, S. and Joyce, T. (2009). Migration of nurses in Australia: where and why? *Australian Journal of Primary Health*, 16(1): 17-24
- Rezaei-Adaryani, M., Salsali, M. and Mohammadi, E. (2012). Nursing image: An evolutionary concept analysis. *Contemporary Nurse*. 43(1): 81-89
- Sherman R.O. and Eggenberger, T. (2008). Transitioning internationally recruited nurses into clinical settings. *Journal of Continuing Education in Nursing*, 39(12):535-544
- Smith, C.D.A., Fisher, C. and Mercer, A. (2011). Rediscovering nursing: A study of overseas nurses working in Western Australia. *Nursing and Health Sciences*, 13, 289-295
- Terry, L.M., Carr, G. and Williams, L. (2013). The Effect of Fluency in English on the Continuing Professional Development of Nurses Educated Overseas. *The Journal of Continuing Education in Nursing*, 44(3):137-144
- Toh, S.G., Ang, E. and Devi, M.K. (2012). Systematic review on the relationship between the nursing shortage and job satisfaction, stress and burnout levels among nurses in oncology/haematology settings. *International Journal of Evidence-Based Healthcare*, the Joanna Briggs Institute, 10:126-141
- Walters, H. (2008). The Experiences, Challenges and Rewards of Nurses from South Asia in the Process of Entering the Australian Nursing System. *Australian Journal of Advanced Nursing*, 25(3): 95-105.
- Xu, Y. (2007). Strangers in strange lands: A meta-synthesis of lived experiences of immigrant Asian nurses working in Western countries. *Advances in Nursing Science*. 30, 246-265
- Xu, Y. (2010). Transitioning International Nurses: An Outlined Evidence-Based Program for Acute Care Setting. *Policy, Politics & Nursing Practice*. 11(3):202-213

Xu, Y. and He, F. (2012). Transition Programs for Internationally Educated Nurses: What Can the United States Learn from the United Kingdom, Australia, and Canada? *Nursing Economic*, Vol. 30(4):215-223

Yunxian, Z. (2010). The experience of China educated nurses working in Australia: A symbolic interactionist perspective. School of Nursing and Midwifery, Faculty of Health and Biomedical Innovation, Queensland University of Technology, Doctor of Philosophy Thesis, Brisbane, Australia

Health literacy, does it make a difference?

AUTHOR

Anne Johnson

RN, RM, PICNC, Dip T, Grad Dip Health Counselling, B Ed, M Ed, PhD
Academic status as Associate Professor Public Health, Flinders University
Health Sciences Building, Registry Road, Bedford Park, South Australia

Community Engagement Consultant
20 Arthur Street, Penola, South Australia
anne@communityengagement.com.au

ACKNOWLEDGMENT

I would like to acknowledge the support of the South Australian Premier's Nursing and Midwifery Scholarship and Professor Mike Wolf, Northwestern University, Chicago.

KEY WORDS

Health literacy; patient education; social determinants; patient communication; patient education

ABSTRACT

Objective

To provide contextual information about health literacy and its importance to health care, nursing, and health consumers.

Primary argument

Health literacy is of concern to all health workers, including nurses, working in all areas of the Australian health care system. Low levels of health literacy is a significant problem in Australia. Population measurements of functional health literacy levels (ABS 2008) indicate that 59 per cent of the Australian population aged 15 to 74 years did not achieve an adequate health literacy skill level to meet the complex demands of everyday life and work in a knowledge-based economy. Nurses play a vital role in the care and education of health consumers. As such an understanding of health literacy and how it impacts on health care and health outcomes is central to providing patient-centred care, and improving health outcomes.

Conclusion

An understanding by nurses of health literacy is central to enhancing the involvement of health consumers in their care, and improving health outcomes and the provision of safe health care.

INTRODUCTION

The need for health consumers to be 'health literate' in today's society is greater than ever before. Health consumers are required to participate in more complicated preventative health care and self-care regimes, understand more complex health information, and navigate more complex health systems.

Low levels of health literacy are a significant problem in Australia. Population measurements of functional health literacy levels (ABS 2008) indicate that 59 per cent of the Australian population aged 15 to 74 years did not achieve an adequate health literacy skill level to meet the complex demands of everyday life and work in a knowledge-based economy. Although low levels of health literacy is disproportionate in certain demographic groups, such as the elderly, people from non-English speaking backgrounds (in an English speaking society), and people with low general literacy; low levels of health literacy affects all segments of the population (Agency for Healthcare Research and Quality 2010). Health literacy levels can be context specific and can change depending on the problem being addressed, when the interaction takes place, and clarity of communications. Unfamiliar words, concepts, instructions, being ill itself, as well as the stress, fatigue, and fear produced by illness can also be challenges, as physical and psychological stressors impact on a person's ability to pay attention, comprehend, and remember information (Dickens et al 2013; Martin et al 2011; Baker et al 1996; Parikh et al 1996).

This article will provide an introduction to health literacy by covering an overview of key literature about (1) understanding health literacy as a concept and (2) the importance of health literacy to health care.

DISCUSSION

Understanding health literacy

The concept of health literacy was introduced in 1974 by Simonds (1974), though few references to health literacy were again found in the literature until 1992. The term originated from the field of public health where it developed in the context of health education, health promotion, and primary prevention. As such health literacy is a relatively new concept for nurses, with only a few references to health literacy appearing in the nursing literature (Cafiero 2013; Coleman et al 2013; Dickens et al 2013; Speros 2005;).

Health literacy is one of a range of different 'literacies' referred to in the literature. Norman and Skinner (2006) have identified six types of literacies:

- Traditional (general) literacy
- Media literacy
- Information literacy
- Computer literacy
- Scientific literacy
- Health literacy

Health literacy is the junction between general literacy, health, and health care but also can incorporate aspects of the other types of literacies to varying degrees (Kickbusch 2001). The concept of health literacy originated due to the recognition that people need more than general literacy skills to be able to manage the complexities of health and health system issues (Kickbusch 2001). There is a considerable overlap between general literacy and health literacy, but there are strong health-specific demands involved in health literacy which are different to those in general literacy (Rudd 2007).

There are various definitions of health literacy which have evolved from an earlier focus on the literacy skills needed to obtain and understand health information, to a broader focus on people's ability to use the

information and empowerment (Sørensen et al 2012; Nutbeam 2008). Health literacy is both a means, and an outcome, of actions aimed at promoting the empowerment and participation of people in their health care and of people in their communities (WHO 2013).

The definition by Sørensen et al (2012 pp 3) takes a broad approach to defining health literacy:

Health literacy is linked to literacy and entails people's knowledge, motivation and competences to access, understand, appraise, and apply health information in order to make judgments and take decisions in everyday life concerning health care, disease prevention and health promotion to maintain or improve quality of life during the life course.

Health literacy represents a constellation of skills including the ability to interpret information and read and write prose (print literacy), use quantitative information (numeracy), speak and listen effectively (oral literacy), self-efficacy and navigation (Agency for Healthcare Research and Quality 2011; Institute of Medicine of the National Academies 2004) .

Several underpinning health literacy concepts have been identified by Nutbeam (2008; 2000). Nutbeam (2000) describes health literacy as having three skill levels which progressively increase individuals' decision making and empowerment and can be increased through formal and informal education methods and experiences:

- 'Functional health literacy' refers to basic skills in reading and writing and capacity to apply these skills in everyday concepts;
- 'Interactive health literacy' refers to more advanced cognitive and literacy skills, greater ability to obtain relevant information, derive meaning and apply new information to changing circumstances; and
- 'Critical health literacy' refers to the most advanced cognitive and literacy skills, critical analysis of information, and ability to use information to respond, adapt and control life events.

Over the last decade there has been an increased focus on the demands and burdens placed on people who seek care in complex health systems (Brach et al 2012; Rudd 2003). There is growing appreciation that health literacy is the product of the interaction between individuals' capacities and the health literacy-related demands and complexities of the health care system. More recently the term health literate organisation and health literacy environment have been defined by Brach et al (2012) and Rudd and Anderson (2006). The health literacy environment reflects the demands and complexity of the health system and society at large e.g. the infrastructure, policies, processes, materials and relationships that exist within society and the health system that make it easier, or more difficult, for health consumers to navigate, understand and use information and services to make effective decisions and take appropriate action about their health and health care (Brach et al 2012).

Importance of health literacy to health care

Strong international evidence shows the negative relationship between health literacy and a health consumer's ability to function within health care settings, as well as the ability to understand prescriptions and diagnoses, chronic disease management and provide informed consent (Fink et al 2010; Adams et al 2009; Coulter et al 2008; Baker et al 2004; Institute of Medicine of the National Academies 2004; Sentell and Ratcliff-Baird 2003; Baker et al 1996).

People with low levels of health literacy are associated with:

- Poorer overall health status (WHO 2013; Berkman et al 2011; Agency for Healthcare Research and Quality 2010; Adams et al 2009; Institute of Medicine of the National Academies 2004).

- Higher rates of hospitalisation and death, and longer stays in hospital (Berkman et al 2011; Baker et al 1996).
- Higher rates of hospital readmission within 30 days of discharge (Mitchell et al 2012).
- Decreased capacity to manage chronic disease (Gazmararian 2003).
- Less ability to recall information after a clinic visit (Kessels 2003).
- Are more likely to make errors with medication (Lenahan et al 2013; Berkman et al 2011).
- Are more ill when they seek medical care (Berkman et al 2011; Agency for Healthcare Research and Quality 2010; Institute of Medicine of the National Academies 2004).
- Have less knowledge of their illness management (Schillinger et al 2002; Williams et al 1998)
- Use preventive services less frequently, and have increased patient costs (Howard et al 2005; Baker et al 2004; Institute of Medicine of the National Academies 2004).
- Are more likely to not keep appointments (Baker et al 1996).

Research suggests that health literacy is a stronger predictor of health status than socio-economic status, age, or ethnic background (Sudore et al 2006; Parker et al 2003; Schillinger et al 2002; Williams et al 1998). For example, in the study by Sudore et al (2006) it was determined that limited health literacy was associated with a nearly two fold risk of death, even when adjustments were made for demographics, socio-economic status, co-morbidities and self rated health. The absolute increased risk of death was 9% over five years. This has also been determined by Bush et al (2010) who found that when contextual factors such as age, sex, education, income, ethnicity and health status are taken into account, the associations between the level of health literacy and health outcomes remain. In addition the WHO (2013) reports limited health literacy follows a social gradient and can further reinforce existing inequalities.

Health literacy is recognised as an important component of delivering patient-centred care and culturally and linguistically appropriate services. The relationship between Indigenous factors and health literacy has been examined and suggests that cultural and linguistic distance between staff and patients impedes communication (Vass et al 2011). More specifically health information such as doctor's instructions, medications, and brochures that are based on Western biomedical concepts may be barriers to achieving effective levels of health literacy. This is more prevalent where English is a second language, and where traditional Indigenous beliefs about illness prevail. There is evidence that health professionals need to address the dual challenges of health literacy and cultural competence as there is a common skill set to delivering patient-centred care that focuses on reducing health inequities (Lee 2012).

In Australia, health literacy has been identified as a priority for safe and high quality health care through a number of national policies, including:

- The Australian Safety and Quality Framework for Health Care, where health literacy is identified as a key action area (ACSQHC 2010).
- The Australian Safety and Quality Goals for Health Care, which includes Partnering with Consumers as a Goal and becoming a health literate organisation as a core outcome (ACSQHC 2012a).
- The National Safety and Quality Health Services Standards, which implicitly refers to health literacy and the provision of easy-to-understand information in nine of the ten standards (ACSQHC 2012b).

These national policies provide the safety and quality framework for health reform and health care in Australia

and are integral to setting the standards for the way all health workers, including nurses, work within different health care settings.

Low health literacy skills are not only problematic for consumers and the public. Health care professionals can also have low health literacy skills, such as a reduced ability to explain health issues clearly to consumers and the public. The mismatch between a consumer's ability to understand, and a health professional's communication skills can lead to adverse health outcomes (Agency for Healthcare Research and Quality 2010). Research has identified that nurses overestimate their patients' health literacy 6:1, and that overestimation of a patient's health literacy by nurses may contribute to the widespread problem of poor health outcomes and hospital readmission rates and increased costs to the health system (Dickens et al 2013). It has been identified, that even in non-stressful clinical encounters many patients are still reluctant to admit to any lack of understanding, and feel compelled to follow the recommendations as they understand them, rather than ask for clarity (Dickens et al 2013; Martin et al 2011; Baker et al 1996; Parikh et al 1996).

A systematic review examined the increased costs associated with lower health literacy levels and at a system level the additional costs were found to correspond to approximately 3-5% of total health care spending (Eichler et al 2009). At an individual level, health consumers with lower health literacy levels incurred increased costs of between \$143 and \$7,798 per person, per annum compared to a reference group of health consumers with adequate health literacy levels (Eichler et al 2009).

There has been limited research about the impact of the health literacy environment on health outcomes. However, it is well recognised that the complexity of the health system is challenging for consumers and healthcare providers (Plsek and Greenhalgh 2001) and this complexity is a contributor to poor quality and unsafe care (Institute of Medicine of the National Academies 2001; Kohn et al 2000).

A study by Macabasco-O'Connell and Fry-Bowers (2011) revealed that nursing professional's knowledge of health literacy and their understanding of the role health literacy plays on patient health outcomes is limited. It was identified that 59% of nurses had never had any formal education or training about health literacy, whilst 72% were not aware if their health organisation had a health literacy program in place, and 53% reported that health literacy was a low priority compared with other problems. DeBello (2012) concluded in a study of nursing textbooks and literature commonly used in the USA that nursing education programs (undergraduate and post graduate) are not adequately addressing information about health literacy and health literacy strategies more than 15 years after the Joint Commission initially addressed the issue. Cafiero (2013) identified that 75% of Nurse Practitioners who participated in the study had never, or only sometimes, had health literacy emphasised in the Nurse Practitioner academic curriculum, despite patient education, and information provision with consumers with complex needs and low levels of health literacy, being a significant focus of their role. These studies highlight the low level of nursing knowledge about health literacy in the USA and the failure of nursing literature and education programs to address health literacy. No comparable studies could be found which identified curriculum status, knowledge levels, and perceptions of health literacy, among Australian nurses.

It is imperative that nurses are aware of the concept of health literacy, how low health literacy can be a significant barrier to health consumers accessing and receiving safe and effective health care, and that low health literacy can contribute to poorer health outcomes.

CONCLUSION

The significant impact of limited health literacy on health outcomes makes health literacy a crucial area for nurses to fully understand. An understanding by nurses of health literacy is central to enhancing the

involvement of health consumers in their care, improving health outcomes and the provision of safe health care. If the importance of health literacy is not understood and addressed by all health workers, including nurses, health inequities will widen, poor quality care will be provided, health outcomes will be impacted upon, and the costs of health care provision will continue to increase.

REFERENCES

- Adams, R.J., Appleton, S.L., Hill, C.L., Dodd, M., Findlay, C. and Wilson, D.H. 2009. Risks associated with low functional health literacy in an Australian Population. *Medical Journal of Australia*, 191(10):530-534.
- Agency for Healthcare Research and Quality, 2010, Health Literacy Universal Precautions Toolkit, US Department of Health and Human Services. <http://www.ahrq.gov/qual/literacy/> (accessed 12.03.14).
- Agency for Healthcare Research and Quality. 2011. Health Literacy Interventions and Outcomes: An Updated Systematic Review: Executive Summary. Rockville, MD. <http://www.ahrq.gov/research/findings/evidence-based-reports/litupsum.html> (accessed 12.03.14).
- Australian Bureau of Statistics. 2008. Health Literacy Australia 2006. Canberra. Cat. No.4233.0.
- Australian Commission on Safety and Quality in Health Care. 2010. Australian Safety and Quality Framework for Health Care. <http://www.safetyandquality.gov.au/wp-content/uploads/2012/01/32296-Australian-SandQ-Framework1.pdf>. (accessed 12.03.14).
- Australian Commission on Safety and Quality in Health Care. 2012a. Australian Safety and Quality Goals for Health Care, Partnering with Consumers. <http://www.safetyandquality.gov.au/wp-content/uploads/2012/08/3-Partnering-with-consumers.pdf> (accessed 12.03.14).
- Australian Commission on Safety and Quality in Health Care. 2012b. National Safety and Quality Health Service Standards. <http://www.safetyandquality.gov.au/wp-content/uploads/2011/09/NSQHS-Standards-Sept-2012.pdf> (accessed 12.03.14).
- Baker, D. W., Parker, R.M., Williams, M.V., Pitkin, K., Parikn, N., Coates, W. and Imara, M. 1996. The health care experience of patients with low literacy. *Archives of Family Medicine*, 5(6):329-334.
- Baker, D.W., Gazmararian, J., Williams, M., Scott, T., Parker, R., Green, D., Ren, J. and Peel, J. 2004. Health literacy and use of outpatient physician services by Medicare managed care enrollees. *Journal of General Internal Medicine*, 19(3):215-220.
- Berkman, N.D., Sheridan, S.L., Donahue, K.E., Halpern, D.J., Viera, A., Crotty, K., Holland, A., Brasure, M., Lohr, K. N., Harden, E., Tant, E., Wallace, I. and Viswanathan, M. 2011. Health literacy interventions and outcomes: An updated systematic review. Agency for Healthcare Research and Quality: Rockville, MD. Publication Number 11-E006. <http://www.ahrq.gov/clinic/tp/lituptp.htm> (accessed 12.03.14).
- Brach, C., Keller, D., Hernandez, L.M., Bauer, C., Parker, R., Dreyer, B., Schyve, P., Lemerise, A.J. and Schillinger, D. 2012. Ten Attributes of Health Literate Health Care Organizations. Institute of Medicine of the National Academies, http://iom.edu/~media/Files/Perspectives-Files/2012/Discussion-Papers/BPH_Ten_HLit_Attributes.pdf (accessed 12.03.14).
- Bush, R., Boyle, F., Ostini, R., Ozolins, I., Brabant, M., Soto, E. et al. 2010. Advancing health literacy through primary health care systems. Canberra. Australian Primary Health Care Research Institute. <http://www.uq.edu.au/health/healthycomm/docs/APHCRlreport.pdf> (accessed 12.03.14).
- Cafiero, M. 2013. Nurse practitioners' knowledge, experience and intention to use health literacy strategies in practice. *Journal of Health Communication*, 18:70-81.
- Coleman, C.A., Hudson, S. and Maine, L.L. 2013. Health Literacy Practices and Educational Competencies for Health Professionals: A Consensus Study. *Journal of Health Communication*, 18:82-102.
- Coulter, A., Parsons, S. and Askham, J. 2008. Where are the patients in decision-making about their own care? World Health Organization. <http://www.who.int/management/general/decisionmaking/WhereArePatientsinDecisionMaking.pdf> (accessed 12.03.14).
- DeBello, M. 2012. A review of nursing textbooks and nursing journals on health literacy strategies. Are nursing students getting the needed information on health literacy? Conference: Health Literacy Annual Researchers Conference: Bethesda, Washington D.C.
- Dickens, C., Lambert, B., Cromwell, T., and Piano, M. 2013. Nurse Overestimation of Patients' Health Literacy. *Journal of Health Communication*, 18:62-69.
- Eichler, K., Wieser, S. and Brugger, U. 2009. The cost of limited health literacy: A systematic review. *International Journal of Public Health*, 54:313-324.
- Fink, A.S., Prochazka, A.V., Henderson, W.G., Bartenfeld, D., Nyirenda, C., Webb, A. and Berger, D.H. et.al. 2010. Predictors of comprehension during surgical informed consent. *Journal of American College of Surgeons*, 210(6):919-926.
- Gazmararian, J.A., 2003. Health literacy and knowledge of chronic disease. *Patient Education Counselling*, 51(3):267-275.
- Howard, D.H., Gazmararian, J. And Parker, R.M. 2005. The impact of low health literacy on the medical costs of Medicare managed care enrollees. *American Journal of Medicine*, 118:371-377.
- Institute of Medicine of the National Academies. 2004. Health Literacy: A prescription to End Confusion. The National Academies Press. Washington, D.C.
- Institute of Medicine of the National Academies. 2001. Crossing the Quality Chasm: A New Health System for the Twenty-first Century. Washington: National Academies Press.

- Kessels, R.P. 2003. Patients' memory for medical information. *Journal Research Social Medicine*, 96(5):219-222.
- Kickbusch, I., 2001. Health literacy: addressing the health and education divide, *Health Promotion International*, 16(2):289-297.
- Kohn, L., Corrigan, J. and Donaldson, M. 2000. *To Err is Human: Building a Safer Health System*. Washington: Institute of Medicine. <http://www.nap.edu/openbook.php?isbn=0309068371> (accessed 12.03.14).
- Lee, D., Carter-Pokras, O., Braun, B. and Coleman, C. 2012. What do Health Literacy and Cultural Competence Have in Common? Calling for a Collaborative Health Professional Pedagogy. *Journal of Health Communication: International Perspectives*, 17(3):13-22. <http://www.tandfonline.com/doi/pdf/10.1080/10810730.2012.712625> (accessed 12.03.14).
- Lenahan, J.L., McCarthy, D.M. and Davis, T.C. 2013. A drug by any other name: patients' ability to identify medication regimens and its association with adherence and health outcomes. *Journal of Health Communication*, 18:31-39.
- Macabasco-O'Connell, A. and Fry-Bowers, E. 2011. Knowledge and Perceptions of Health Literacy Among Nursing Professionals. *Journal of Health Communication: International Perspectives*, 16(3):295-307.
- Martin, L., Schonlau, M., Hass, A., Derose, K., Rosenfeld, L., Buka, S. and Rudd, R. 2011. Patient activation and advocacy: Which literacy skills mater most? *Journal of Health Communication*, 16(3):177-190.
- Mitchell, S.E., Sadikova, E., Jack, B.W. and Paasche-Orlow, M.K. 2012. Health literacy and 30-day post discharge hospital utilization. *Journal of Health Communication*, 17:Suppl 3:325-338.
- Norman, C.D. and Skinner, H.A. 2006. eHealth Literacy: Essential Skills for Consumer Health in a Networked World. *Journal of Medical Internet Research*, http://openi.nlm.nih.gov/detailedresult.php?img=1550701_jmir_v8i2e9_fig1&req=4 (accessed 12.03.14).
- Nutbeam, D. 2000. Health literacy as a public health goal: a challenge for contemporary health education and communication strategies into the 21st century. *Health Promotion International*, 15:259-267.
- Nutbeam, D. 2008. The evolving concept of health literacy. *Journal of Social Science and Medicine*, 67(12):2072-2078.
- Parikh, N., Parker, R., Nurss, J., Baker, D. and Williams, M. 1996. Shame and health literacy: The unspoken connection. *Patient Education and Counseling*, 27(1):33-39.
- Parker, R.M., Ratzen, S.C. and Lurie, N. 2003. Health literacy: a policy challenge for advancing high quality health care. *Health Affairs*, 22(4):147.
- Pisek, P.E. and Greenhalgh, T. 2001. The challenge of complexity in health care. *British Medical Journal*, 323:625-628.
- Rudd, R.E. 2003. Health Literacy Action Plan, in *Communication Health*. Office of the Surgeon General, Washington DC: HHS.
- Rudd, R. and Anderson, J. 2006. The health literacy environment of hospitals and health centers. <http://www.hsph.harvard.edu/healthliteracy/files/healthliteracyenvironment.pdf> (accessed 12.03.14).
- Rudd, R. 2007. Health literacy skills of U.S. adults. *American Journal of Health Behavior*, Sep-Oct(31 Suppl 1):s8-18.
- Schillinger, D., Grumbach, K., Piette, J., Wang, F., Osmond, D., Daher, C., Palacios, J., Sullivan, G. and Bindman, A. 2002. Association of health literacy with diabetes outcomes. *Journal of the American Medical Association*, 288:475-482.
- Sentell, T.L. and Ratcliffe-Baird, B. 2003. Literacy and comprehension of Beck Depression Inventory response alternatives. *Community Mental Health Journal*, 39(4):323-331.
- Simonds, S. 1974. Health education as social policy. *Health Education Monograph*, 2:1-25.
- Sørensen K, Van den Broucke S, Fullam J, Doyle G, Pelikan J, Slonska Z, Brand H: (HLS-EU) Consortium Health Literacy Project European. 2012. Health literacy and public health: A systematic review and integration of definitions and models. *BMC Public Health*, 12(80):1-13.
- Speros, C. 2005. Health literacy: concept analysis. *Journal of Advanced Nursing*, 50(6):633-640.
- Sudore, L., Yaffe, K., Satterfield, S., Harris, T., Mehta, K., Simonsick, E., Newman, A., Rosano, C., Rooks, R., Rubin, S., Ayonayon, H. and Schillinger, D. 2006. Limited Literacy and Mortality in the Elderly. *Journal of General Internal Medicine*, 21:8. <http://onlinelibrary.wiley.com/doi/10.1111/j.1525-1497.2006.00539.x/pdf> (accessed 12.03.14).
- Vass, A., Mitchell, A. and Dhurrkay, Y. 2011. Health literacy and Australian Indigenous peoples: An analysis of the role of language and worldview. *Health Promotion Journal of Australia*, 22(1):33-37.
- Williams, M.V., Baker, D.W., Paraket, R.M. and Nurss, J.R. 1998. Relationship of functional health literacy to patients' knowledge of their chronic disease. *Archives of Internal Medicine*, 158:166-172.
- World Health Organization. 2013. The Solid Facts. Health Literacy. http://www.euro.who.int/__data/assets/pdf_file/0008/190655/e96854.pdf (accessed 12.03.14).