International Journal of Nursing Studies 52 (2015) 317–324

Contents lists available at ScienceDirect

International Journal of Nursing Studies

journal homepage: www.elsevier.com/ijns

A nurse-delivered brief health education intervention to improve pneumococcal vaccination rate among older patients with chronic diseases: A cluster randomized controlled trial

Sophia S.C. Chan [a,*], Doris Y.P. Leung [b], Angela Y.M. Leung [a], Cindy Lam [c], Ivan Hung [d], Daniel Chu [e], Chi Kuen Chan [f], Janice Johnston [g], Shao Haei Liu [h], Raymond Liang [d], Tai Hing Lam [g], Kwok Yung Yuen [i]

[a] School of Nursing, The University of Hong Kong, 4/F, William MW Mong Block, LKS Faculty of Medicine, 21 Sassoon Road, Pokfulam, Hong Kong
[b] The Nethersole School of Nursing, The Chinese University of Hong Kong, Room 830, Ester Lee Building, Sha Tin, Hong Kong
[c] Family Medicine Unit, Department of Medicine, LKS Faculty of Medicine, The University of Hong Kong, 3/F, 161 Main Street, Ap Lei Chau Clinic, Ap Lei Chau, Hong Kong
[d] Department of Medicine, The University of Hong Kong, 4/F, Professorial Block, Queen Mary Hospital, 102 Pokfulam Road, Hong Kong
[e] Family Medicine & Primary Healthcare Services, Hong Kong East Cluster, Hospital Authority, Pamela Youde Nethersole Eastern Hospital, 3 Lok Man Road, Chai Wan, Hong Kong
[f] Queen Mary Hospital, 1/F., Block A, Pokfulam Road
[g] School of Public Health, The University of Hong Kong, 5/F, William MW Mong Block, LKS Faculty of Medicine, 21 Sassoon Road, Pokfulam, Hong Kong
[h] Quality & Safety Division, Hospital Authority, Hospital Authority Building, 147B Argyle Street, Kowloon, Hong Kong
[i] Department of Microbiology, The University of Hong Kong, University Pathology Building, Queen Mary Hospital Compound, Pokfulam, Hong Kong

ARTICLE INFO

Article history:
Received 3 December 2013
Received in revised form 25 April 2014
Accepted 12 June 2014

Keywords:
Interventions
Older patients
Pneumococcal vaccination
Randomized controlled trial

ABSTRACT

Background: The 23-valent pneumococcal polysaccharide vaccine is recommended for elders, especially those with chronic conditions.
Objective: The aim of this study was to determine if an additional multi-component health education intervention increases the uptake rate of the pneumococcal vaccination among older patients with chronic diseases.
Methods: A cluster randomized controlled trial was conducted from 3 December 2007 to 7 March 2008. The clusters were the individual weeks within five Hong Kong outpatient clinics over a 10-week period. A sample of 2517 patients aged 65 or above with chronic diseases was recruited. Intervention group received a 3-min brief telephone education intervention before and a 3-min face-to-face intervention during scheduled medical appointments at the respective clinics. All subjects received standard care including health education leaflets and/or a video show at the clinics. Pneumococcal vaccination rate and awareness of the vaccination at 3-month follow up were measured.

* Corresponding author. Tel.: +852 98354542.
E-mail address: nssophia@hkucc.hku.hk (Sophia S.C. Chan).

http://dx.doi.org/10.1016/j.ijnurstu.2014.06.008

Results: The vaccination rate was higher in the intervention group compared to the control group (57% vs 48%; relative risk = 1.20, 95% CI = 1.06–1.37), but the two groups did not differ significantly in their awareness of the vaccination at 3-month follow up (65% vs 59%, relative risk = 0.86, 95% CI = 0.69–1.07).
Discussion: A nurse-delivered brief health education intervention was effective in increasing uptake of pneumococcal vaccination among older patients with chronic diseases.

What is already known about this topic?

- Pneumococcal vaccination has been recommended for elders by the Hong Kong SAR Government since October 2007.
- Pneumococcal vaccination is relatively new to people, especially in Hong Kong.
- No study on testing the use of health educational programmes to promote pneumococcal vaccination uptake in the Asian countries.

What this paper adds

- Evaluation of a nurse-delivered health education intervention which aimed to improve pneumococcal vaccination rate among older patients with chronic diseases.
- The vaccination rate was higher in older patients who received a 3-min brief telephone education intervention and/or a 3-min face-to-face intervention than those only received standard care including health education leaflets and/or a video show at the clinics.
- The two groups did not differ significantly in their awareness of the vaccination at 3-month follow up.

1. Introduction

Streptococcus pneumoniae causes invasive pneumococcal diseases (IPD) including septicaemia, meningitis and bacteraemic pneumonia in all age groups, especially in children, elders, and persons with chronic illnesses (Centers for Disease Control and Prevention, 1997). The incidence rate of IPD in older people is triple of those aged 15–64 years, and they have the highest risk of death from IPD (Robinson et al., 2001). Globally, IPD had caused 1.6 million deaths annually in 2005 (World Health Organization, 2012). In developed countries, the annual incidence rates of IPD range from 10 to 100 per 100,000 with higher incidence rates in those aged ≥65 years (20–80 per 100,000), whilst in Hong Kong the average annual incidence rate of IPD was 7.7 per 100,000 from 2000 to 2004 (Center for Health Protection, 2012).

The 23-valent pneumococcal polysaccharide vaccine (PPV) is recommended for elders, especially those with chronic conditions. PPV is efficacious in reducing the risk of systematic infection in institutionalized elders (Hutchison et al., 1999), and preventing mortality due to pneumonia (Fisman et al., 2006; Jackson et al., 2003; Loeb, 2003) from observational studies, but its efficacy from randomized controlled trials in older patients with chronic diseases, is still unclear and subject of debate (Moberley et al., 2008). As pneumococcal infections become increasingly difficult to treat due to drug resistance, vaccination is an important and efficient way for preventing IPD due to *S. pneumonia* (Spindler et al., 2008).

Despite recommendations made by governments in many western countries including Finland, Sweden, UK, US and some regions in Spain to deliver PPV to the elders and patients with chronic diseases, the vaccination rates vary substantially across countries. The uptake rates ranged from 3% in Finland to 60% in the US (Ruutu et al., 2004; United States Department of Health and Human Services, 2010). Several strategies involving health care professionals in improving the uptake rate of PPV have been proved effective in randomized trials. A computerized system reminding health professionals about the eligibility of patients for PPV increased the uptake rate from 0.8% to 35.8%, while an education program for patients through videotape-brochure was more effective than video-only and the control group (Dexter et al., 2001; Thomas et al., 2003). A program with educational outreaching visits about the importance of vaccination to practicing physicians and a nurse-delivered education intervention to patients on discharge increased the vaccination rates (Siriwardena et al., 2002; Thomas et al., 2005). However, to the best of our knowledge, no study on testing the use of a nurse-delivered brief telephone and face-to-face health education intervention to promote PPV uptake in Asian countries has been reported.

PPV has been recommended for elders by the Hong Kong SAR Government since October 2007 (Hutchison et al., 1999). Prior to 2007, vaccination for pneumococcal infection was not common and the estimated use of PPV was less than 10% for those aged over 65 years (Ho et al., 2004). The uptake rate of influenza vaccination was also very low even after the outbreak of Severe Acute Respiratory Syndrome and substantial promotion from the Government, as reflected by a 2004 study in Hong Kong which estimated that about 70% of patients visiting a public clinic did not have influenza vaccination within the past 5 years of the clinic visit (Mok et al., 2006). Consequently, additional efforts, other than mass media promotion, are needed to improve the uptake rate of vaccination. As PPV is relatively new to people in Hong Kong, it is important to implement and evaluate appropriate health education interventions to promote PPV and improve the vaccination rate, especially in vulnerable older patients with chronic diseases. Nurses are the largest group of health care professionals who have the greatest frequency and duration of contact with patients, and thus have a strong potential to influence patients' behaviors.