A new role for nurses in helping Mainland Chinese Outpatient Attendees Quit Smoking

Why is this research or review needed?

- Tobacco use is the leading cause of preventable death in China, but quit smoking reduces health risks and premature death.
- Nurses in hospitals and outpatient departments are in a primary position to assess smoking behaviors and engage in interventions.
- In China to-date nurses have no formal education in smoking assessment nor in providing interventions strategies.
- Information about the characteristics of adult Chinese smoking habits and associated health risk demographics is needed to inform cessation interventions

What are the key findings?

- Male patients (ratio of 8:1), and those with lower education levels or with less self-reported exercise tended to be smokers.
- Patients who were married were more likely to have ever smoked but also to have quit smoking.
- Abnormal blood pressure readings were found among patients who had ever smoked and for ex-smokers; however, the presence of coexisting hypertension was only significantly related to being an ex-smoker.
- Coexisting dyslipidemia was associated with being an ex-smoker.
- Alcohol drinking was strongly associated with smoking and patients who have quitted

drinking were significantly more likely to have quitted smoking.

- Ex-smokers were more likely to be either married or divorced with a higher diastolic blood pressure and a concurrent history of hypertension.

How should the findings be used to influence policy/practice/research/education?

- This study provides baseline data for nurses, China's largest group of frontline healthcare providers within hospital environments, to conduct health assessments and targeted intervention towards smoking cessation.
- Policy recommendations that all nurses should add opportunistic assessments and brief cessation interventions to all newly admitted outpatients who smoke.
- Enhanced efforts to educate nurses about evidence-based strategies to support smoking cessation is critical, especially the need for follow-up processes to prevent relapses after hospitalization

Abstract

Introduction

China has over 300 million cigarette smokers and one million deaths every year attributed to smoking. Despite its huge economic implications, the lack of smoking and associated lifestyle-related data on China's outpatients makes it difficult for health professionals to provide individualized assessments and targeted interventions. This study aimed to identify factors to inform nurse-led smoking behavioral assessments and cessation interventions.

Methods

Clinical data from new patients attending the family medicine (FM) outpatient department from a large tertiary hospital in a major Southern China city was collected between March and December, 2015. Data including basic demographics, past medical history, vaccination history, current medication as well as information on lifestyle risk factors was collected by frontline nurses during nursing assessment on their initial visit. *Chi*-squared and Student's *t*-tests were used as univariate analysis and *post-hoc* regression analysis to explore which factors contributed towards smoking cessation.

Results

Of 7913 eligible visits, smokers and ex-smokers accounted for 13.5% and 2.4% of new patients with majority of them being young and male (gender ratio of 8:1) smokers. Multiple behavioral risks and co-morbidities such as hypertension and diabetes mellitus in smokers were common; for example, 17.9% smokers were also current drinkers making alcohol users

8.5-16.7 times more likely to have smoked. Ex-smokers were more likely to be divorced, ex-drinkers, or to have higher diastolic blood pressure and concurrent hypertension.

Conclusion

Smoking and associated lifestyle risk assessments run by registered nurses should be incorporated into current outpatient health histories and in targeted smoking cessation intervention programs.

Word count: 250

Key words: cigarette smoking; risk behavior; nursing assessment, China

Introduction

Smoking is a major health burden worldwide and constitutes the leading preventable cause of mortality. Tobacco use poses a considerable risk factor for non-communicable diseases including cancers, cardiovascular diseases, chronic respiratory diseases and diabetes [1,2]. According to Global Adult Tobacco Survey (GATS) data from 17 countries collected, 30.0% of smokers had visited a healthcare provider in the previous year, but only 40.8% of smokers aged 15 years or older were asked if they had ever smoked by a healthcare service worker. Even fewer current smokers (16.1%) had considered quitting and one-third of those who had tried to quit were still smoking [3]. In China, few smokers have successfully quitted the habit with only 8·6% of those who ever smoked reported to have managed [4].

Strong evidence that exists on the success of smoking cessation in Asian countries comes from high resource countries such as Japan [5,6] and Singapore [7]. However, evidence on smoking cessation from Mainland China is sparse [1,2] and even more rare if the nurses are involved. A recent Chinese study indicated that over one-in-four (28.1%) adults in the community were smokers, with a male prevalence ratio of 22 to 1 [8]. In addition to this, a rise in smoking rates was noted among the young and female populations [9]. However permanent damage to the lungs was long-lasting with a greater risk of death from chronic obstructive pulmonary disease in female smokers [10]. Frontline nursing staff in acute care hospitals or outpatient clinics are considered to be the most accessible and professionally

equipped staff to provide initial opportunistic assessments, screening, and potentially conduct cessation programs as well as evaluate the long-term effectiveness of these programs. Moreover, nurses who are predominantly female may relate to these young, female smokers better and have a better chance to modify their lifestyle behaviors.

Enabling the capacity of healthcare workforce to clinically assess and intervene in smoking risk behaviours has been mandated in the WHO Framework Convention on Tobacco Control (FCTC). WHO (2013) stipulates that smoking cessation programs need to be adequately resourced, timely and delivered in a professional manner to provide smokers with the necessary support to quit [11]. Nurses constitute the first point of contact and most accessible tier of healthcare providers by virtue of the 24 hour care provided, and can play a key role in smoking assessment risk and cessation management [12]. The International Council of Nurses advocates for the involvement of registered nurses in assessing and conducting smoking cessation interventions to all patients and in particular those in hospital settings [13].

In China to-date the registered nurses' role in smoking assessment and intervention has not been developed nor has this been incorporated into the current scope of nursing practice. Furthermore, the current lack of data on the characteristics and comorbidities of Mainland Chinese outpatient attendees who smoke or have ever smoked makes it difficult for both policymakers and frontline healthcare professionals, in particular nurses, to devise relevant smoking risk assessments and allied cessation programs that are

individualized towards the target population. This study aimed to fill this knowledge gap by collecting epidemiological data from outpatient attendees during the pre-consultation assessment conducted by nurses at Family Medicine clinic in a major hospital of a major city in Southern China. A secondary aim was to identify items that could be included in an initial routine nursing assessment in order to contribute towards long-term sustainable nurse-led outpatient smoking cessation programs.

Methods

Shenzhen has a permanent resident population of over 12 million people [14] and is the fourth largest city and the highest GDP in China [15]. It is a relatively young, growing city, in close proximity to Hong Kong that has emerged as one of the economic powerhouses in South China. The workforce for Shenzhen's rapidly expanding industries comprises of a highly mobile and young population coming from all the regions of China, and hence stress and smoking rate is high. The University of Hong Kong-Shenzhen Hospital (HKU-SZH) was opened in 2012 as the first public hospital built to a territory-center standard with 2000 beds established by the Shenzhen Municipal Government and managed by HKU.

An exploratory descriptive design was employed to collect demographic and clinical data from new patients who were at least 18 years of age attending the HKU-SZH FM outpatient clinic between March and December, 2015. A total of 50,000 individual

outpatients attended the hospital during that period. The data was collected by frontline nurses during each patient's routine pre-consultation on their initial visit. The data collected specifically included basic demographics, past medical history, vaccination history, current medication as well as information on lifestyle risk factors.

Descriptive statistics were calculated using mean, range and standard deviation (SD). Only patients whose clinical data included a complete set of BMI, concurrent medical illnesses, clinic blood pressure readings, smoking status and alcohol use were included for analyses. *Chi*-squared and Student's *t*-tests were used as univariate analysis for exploring differences between current smokers and ex-smokers in terms of different categorical and continuous variables respectively. All p-values <0.05 were considered to be statistically significant. Further *post-hoc* regression analysis was performed to explore which factors contributed towards smoking cessation, after controlling for factors that were associated with ever-smokers and ex-smokers at p-values of <0.1 in univariate analysis. All statistical analyses were performed with SPSS v20.0 for Windows in an anonymized fashion.

Results

A total of 15,871 new patient visits were made at the HKU-SZH FM clinic, of which 7913 cases were eligible for analyses during the study period. Details of the outpatient demographics are shown in Table 1. The majority of the analyzed population were female

(57.3%), but there were markedly more male than female smokers (gender ratio of around 8:1). 17.9% were also current drinkers. The majority had normal blood pressure readings but 4.9%, 1.5% 0.3% and 0.1% of these patients were recorded as having had coexisting hypertension, diabetes mellitus, dyslipidemia and stroke, respectively.

Results of our univariate analyses are shown in Table 2. Females ($p<0.001$) were significantly less likely to have ever smoked. Educational levels were only significantly related to “ever smoking” status, yet no significant relationship was found with the ex-smokers. Patients who were married in our cohort were more likely to have ever smoked ($p=0.012$) and also to have previously quitted smoking ($p=0.001$). Abnormal blood pressure readings were found to be associated with patients who had ever smoked as well as for ex-smokers ($p\leq0.001$); however, the presence of coexisting hypertension or dyslipidemia was only significantly related to being an ex-smoker ($p<0.001$ and $p=0.047$ respectively). Although alcohol drinking was strongly associated with smoking ($p<0.001$), patients who had quit drinking were significantly more likely to have also quit smoking l ($p<0.001$).

Results of logistic regression analysis are shown in Table 3 and Table 4. Male patients, non-degree holders, and those with less self-reported exercise tended to be smokers. Those who reported alcohol intake (whether current or quitters) were significantly more likely (8.5-16.7 times) to have smoked. On the other hand, ex-smokers were more likely to be either married or divorced (95% confidence interval (CI) 2.06-25.92), ex-drinkers

(95% CI 11.56-46.77), with a higher diastolic blood pressure (95% CI 1.33-4.81) and a concurrent history of hypertension (95% CI 1.33-4.81). However, those with a family history of hypertension were less likely to be ex-smokers.

Discussion

Our data shows it is critical that registered nurses employed within Mainland China's frontline outpatient services be involved in assessing outpatient attendees' smoking and drinking patterns, socio-demographic characteristics, self-perceived health risk and possible state of change documented as a sub-section on the current standardized initial nursing assessment process. This data would provide baseline information to provide targeted ongoing interventions and related support brief counseling. Generally, the proportion of smokers in our population was somewhat lower than a previous community survey in China [8] (13.5% vs. 28.1%). A reason for this discrepancy in our current study may have been related to the self-reporting nature of our data- asking about a socially unacceptable behavior in a clinical setting. Even presuming that the "true" smoking prevalence in the community could be higher, it appears that the "inverse care law"[16] might be in operation, implying that in China many smokers are less likely to have regular healthcare encounters that could provide opportunities for nurse-led smoking assessments and associated interventions.

However, our findings are consistent with previous smoking-related data from China

showing a much higher prevalence of smokers among younger males [8]. Our results were also consistent with findings from previous Western studies, where adults with lower education levels tended to be smokers [5,7], a figure likely to be reflective of the immigrant nature of the Shenzhen population and its rapid industrial growth. Differences within the China data are likely related to variations in population characteristics among its large territory; in particular, it is hypothesized that due to its proximity to Hong Kong, Shenzhen is more likely to share common socio-demographic characteristics.

In 2012, all community hospitals in Beijing began to provide smoking cessation services and in June 2015 China released a national smoking ban, similar to recent developments in the UK, Singapore and Hong Kong. However, enforced smoking bans have resulted in documented difficulties in implementation and enforcement regulations in China [5]. Internationally where smoking bans is enforced, over time there has been a corresponding reduction in and the availability of smoking opportunities, which in turn raises the behavioral barriers to smoking [17]. It follows therefore that strategies at multiple levels ranging from those addressing personal responsibility by way of early risk identification through opportunistic health promotion, identified nursing assessments, to public education campaigns [18].

China new national guidelines on smoking cessation were based on the fact that effective smoking cessation programs can reduce smoking related comorbidities by considerable margins. The challenge, nonetheless, is to incorporate smoking-related health assessment

and cessation interventions as part of standard frontline registered nursing practice so that all outpatients are given opportunities to identify their tobacco use, patterns and intentions and to be given specific advice to quit along with reinforcement and follow-up. Published international studies suggested that up to 70% of smokers said they had wanted to quit; however, only 50% reported that they had tried in the past year. Of these smokers, about a third who tried to quit sought help and only 3-6% of smokers who made an unaided quit attempt were still abstinent one year later [19-21]. One example of a well-researched intervention is nicotine replacement therapy which has been shown to improve quit rates when used in conjunction with initial brief nursing counselling for behavioural change [7]. Therefore, health promotion approach delivered by way of a patient-centered care model by nurses formally educated in comprehensive health decision-making empowerment programs is needed. This would be run for outpatients who identify as smokers and who have concurrent chronic illness, in particular those with abnormal clinical parameters. In contemporary China, it is also imperative that outpatient clinic nurses routinely assess patient's alcohol intake, since concurrent alcohol use and intention to quit drinking has a strong relationship with smoking cessation, a finding that is consistent with a previous study [10].

Nurses in Mainland China's outpatient setting are in a unique position to provide targeted health education and promotion informed interventions on smoking cessation as well as ongoing support as part of a multi-disciplinary health service team leadership [22]. To build capacity to support quit efforts, nurses would need formal education on evidence-based

smoking cessation strategies [23] not currently included in Mainland China undergraduate and postgraduate nursing curricula. A recent study evaluating tobacco control content in tertiary nursing curricula in China and Hong Kong found that while most nursing faculties included a limited knowledge content on the risks and associated co-morbidities of smoking, few included health education and health promotion information about smoking assessment and cessation interventions. Of note, nearly all nursing faculty staff members were reported to also smoke. [24,25].

Study limitations

Despite the fact that our data only covers the outpatient department attendees from one major hospital in Shenzhen, we would contend that these findings are comprehensive enough to advocate for a new role for both outpatient and hospital based nurses. Caution should be drawn when interpreting these results due to limitations in generalizability as only 50% of data from our total population of outpatient attendees was suitable for analysis.

Conclusion

Lifestyle risk identification and knowledge of behavioral supportive therapies, ideally in conjunction with specific pharmacological therapies to improve outcomes, should be built into both all frontline clinical practice. In the clinical arena nurse-led standardized health

assessments that identify risk behaviors such as alcohol intake and smoking must form an essential initial screening routine for all hospital outpatient teams. From an outpatient attendee perspective, nurse-led smoking cessation services in Mainland China need to be targeted in the first instance towards patients with chronic illness and abnormal clinical parameters in order to maximize success and the potential for long-term health benefits.

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