

Acculturation in Preventive Health for Immigrants: A Systematic Review on Influenza Vaccination Programs in a Socio-Ecological Framework

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Engaging immigrants in preventive health care programs, such as vaccination, constitutes a challenge. Existing programs tend to conflate issues related to immigrant status with ethnic or racial minorities. These programs also tend to ignore that acculturation and cultural discourse in health may vary depending on the immigrant subgroup and the host community's social environment. This paper addresses the gap in the literature by proposing a conceptual framework that uses a socioecological perspective to outline acculturation and cultural factors in immigrants' preventive health behaviours. To this end, we synthesized the literature on acculturation and cultural perspectives on preventive health among immigrants. We used a case study on influenza vaccination among Chinese immigrants to illustrate the importance of targeting and tailoring approaches to specific immigrant subgroups. We performed a critical examination of 10 existing influenza vaccination programs adapted for immigrants and ethnic minorities to outline their cultural sensitivity in surface- and deep- structure components. Finally, we proposed a conceptual framework integrating the acculturation factors, cultural elements, and cultural anatomy of the reviewed programs with application to Chinese immigrants as a demonstration of cultural sensitivity. The discussion includes limitations, recommendations, and future directions resulting from this framework to help inform cultural adaptation of preventive health programs for immigrants.

Keywords: immigrants, cultural adaptation, preventive health care, cross-cultural sensitivity, vaccination

The immigrant population is a significant and diverse segment of the Canadian public. One-fifth of Canadians are foreign-born individuals from over 200 countries (Statistics Canada, 2013). Immigrants tend to experience a decline in health status as their years in the host community increase (Health Canada, 2010). Therefore, it is essential to engage immigrants in appropriate preventive health programs before the onset of health problems. We propose a socioecological framework for cultural adaptation for preventive health programs by arguing: (a) *preventive health behaviours involve a cultural negotiation between an immigrant and the host community's social environment during acculturation within the health care life domain*; and (b) *immigrant status is distinct from ethnic or racial minority status in an increasingly diverse population*. Chinese immigrants and influenza vaccination provide an interesting case study to demonstrate these arguments.

Acculturation, Culture, and Preventive Health in Immigrants

According to Redfield, Linton, and Herskovits (1936), "Acculturation comprehends those phenomena which result when groups of individuals having different cultures come into continuous first-hand contact, with subsequent changes in the original cultural patterns of either or both groups" (p. 149). Although classic acculturation models (e.g., unidimensional model, bidimensional model, and Interactive Acculturation Model) help advance research on acculturation, a key drawback of these models is that they assume individuals are fixed in their acculturation strategies. In a culturally plural society, acculturating individuals negotiate resources and strategies from the heritage culture and the host culture to aid in adaptation in different life domains (Birman et al., 2014). The life domain approach posits that acculturation is a multidimensional process involving language, behaviour, and identity. The direction, rate, and outcome of acculturation differ based on the acculturation demands of the particular life domain.

The decline in immigrants' health status with increased time spent in the host community highlights the importance of focusing on the mechanisms that are related to preventive health behaviours during acculturation. Further, health disparities are unequally distributed among immigrants such that immigrants who are visible minorities and allophones, as well as immigrants who have low socioeconomic status (SES) are at an increased risk of transitioning into poor health (Health Canada, 2010; Vang, Sigouin, Flenon, & Gagnon, 2015). Additionally, health care is a cultural transaction in health beliefs, values, expectations, and practices between the immigrants and the host community (Kemp & Rasbridge,

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The first author would like to thank Dr. Celine Pinsent, Sarah Nutter, Hanna McCabe-Bennett, and the members of Groupe d'Analyse Psychosociale de la Santé for their unwavering support and generous feedback.

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2004; Waxler-Morrison, Anderson, Richardson, & Chambers, 2005). During acculturation, immigrants may negotiate resources and strategies from the heritage culture and the host culture to decide the course of action for their health. Because immigrants come from diverse backgrounds, immigrants from different subgroups may have different health care needs, concerns, and experiences. All in all, these observations underline a need for targeted and tailored approaches within preventive health programs.

Influenza Vaccination and Chinese Immigrants

Annually, 3,697 deaths in the United States and 606 deaths in Canada are related to seasonal influenza (Centers for Disease Control and Prevention, 2015; Public Health Agency of Canada, 2015). Influenza outbreaks have multilevel repercussions including mortality, economic burden, absenteeism, disruptions in the delivery of vital services, and overburdened health care system (World Health Organization, 2015). Accordingly, influenza prevention through vaccination has become a salient topic for public health and safety. Immigrants are more susceptible to influenza complications because they are less likely to be vaccinated for influenza (Burnett, Genao, & Wong, 2005; Gilmour & Hofmann, 2010; Nguyen & Altshuler, 2011). Influenza vaccination provides an interesting case study for adult immigrants' preventive health behaviours because adequate protection against influenza requires annual contact with health care providers. Individuals' vaccination behaviour depends on their volitional actions and whether the host community's social environment offers access to appropriate preventive health care services.

New Chinese immigrants provide a good demonstration of the importance of targeted and tailored approaches within preventive health programs. Chinese immigrants allow for a compelling cultural analysis because of their unique health culture compared with the Western biomedical model. We propose there are two key considerations in enhancing immigrants' uptake of preventive health behaviours such as influenza vaccination. First, immigrants' acculturation within the health care life domain influences their preventive health behaviours. Second, this process is in interaction with the host community's social environment. Ultimately, these mechanisms determine immigrants' ability and desire to seek preventive health care services.

Acculturation and the Health Care Life Domain: Considerations for Chinese Immigrants

Acculturation within the health care life domain involves negotiating resources and strategies from the heritage culture and the host culture in response to a health issue (e.g., Genkova, Trickett, Birman, & Vinokurov, 2014). The cultural discourse in the understanding of and response to health issues occur at this stage. Immigrants are more likely to experience these acculturation factors as they try to navigate the health care system in the host community compared with native-born ethnic minorities. The following section discusses how acculturation could be associated with preventive health behaviours among immigrants.

Acculturation and health care utilization. Acculturation to the host culture, measured using language proficiency and length of stay, is positively associated with health care utilization among immigrants in general and Chinese immigrants in particular

(Becerra, Androff, Messing, Castillo, & Cimino, 2015; Lai & Chau, 2007; Lebrun, 2012; Lum & Vanderaa, 2010; Xu & Borders, 2008). Language barriers prevent Chinese immigrants from understanding and expressing health concerns, handling health care administration, and building rapport with their health care providers (Aroian, Wu, & Tran, 2005; Liu, So, & Quan, 2007; Ngo-Metzger et al., 2003; Wang, Rosenberg, & Lo, 2008). Chinese immigrants who strongly identify with traditional health beliefs are less likely to trust non-Asian health care practitioners due to the differences in the etiological understanding of illness (e.g., yin-yang imbalance vs. microbial infections). They are also more likely to experience challenges when communicating with Western health care professionals. New Chinese immigrants may not know where to seek health care services and may experience reduced eligibility for medical coverage due to immigrant health care policies (Asanin & Wilson, 2008; Lebrun, 2012).

Acculturation and health-seeking behaviour. Immigrants' health-seeking behaviours vary depending on their heritage culture, their personal characteristics (e.g., language proficiency), their past experiences with health care, and the host community's health care system (Campbell, Klei, Hodges, Fisman, & Kitto, 2014; Choi, 2013; Maneze, DiGiacomo, Salamonson, Descallar, & Davidson, 2015). Immigrants generally reconstruct their health-seeking behaviours by reconciling health practices from two cultures during acculturation (Chen, Kendall, & Shyu, 2010; Terry, Ali, & Lê, 2011). Chinese immigrants with language barriers tend to seek multiple health information sources and documentation in Chinese (Chen et al., 2010). They may have a preference for traditional Chinese medicine (TCM), but they will also use certain Western health practices (Liu, Beaver, & Speed, 2014, 2015; Ma, 1999; Pang et al., 2003; Wang et al., 2008). Although Chinese culture considers health as a private family affair, Chinese immigrants may be in situations where there is an increased reliance on a nonfamilial social support. Chinese immigrants who seek non-familial social support may feel embarrassed and unwilling to burden "outsiders." Consequently, they may avoid seeking professional help and choose to use self-care.

Acculturation, disease prevention, and vaccination. Immigrants who are acculturated to the host culture, measured using language proficiency and length of stay, are more likely to participate in disease prevention (Breen, Rao, & Meissner, 2010; Lebrun, 2012; Marfani, Rimal, & Juon, 2013). This relationship also applies specifically to Chinese immigrants on a variety of health issues (Chen, 2009; Chen & Wang, 2013; Hislop et al., 2008; Taylor et al., 2007). Immigrants who have high host language proficiency and increased familiarity with the host community tend to have regular access to health care services including influenza vaccination (Farmer, Papachristou, Gotz, Yu, & Tong, 2010; Lebrun, 2012; Lu, Rodriguez-Lainz, O'Halloran, Greby, & Williams, 2014).

Beyond Acculturation Demographic Proxies: Multilevel Cultural Considerations

The literature shows acculturation plays an important role in immigrants' access to and uptake of primary care and preventive services. Most studies use demographic proxies to measure acculturation with the premise that host language proficiency and increased length of stay may help immigrants navigate the health

care system. However, this is a limited view of immigrants' preventive health behaviours because these demographic proxies do not consider the cultural discourse involved, given health care is a sociocultural transaction. Sickness is a multidimensional phenomenon involving the biological malfunction (i.e., disease) and the subjective sociocultural perception and experience of the disease (i.e., illness; Kleinman & Benson, 2006). The Western biomedical model tends to focus on the disease while ignoring the sociocultural manifestation of illness. Culture may affect immigrants' influenza vaccination behaviour, as well as their trust in and compliance with the host community's health care professionals (Burnett et al., 2005; Truman et al., 2009). Although native-born ethnic minorities may experience these cultural discourse in health, these cultural factors may be more salient among immigrants who are new to the health culture in the host community. As would be predicted from a socioecological perspective (Bronfenbrenner, 1977; Erez & Gati, 2004), immigrants may negotiate resources and strategies from both cultures at multiple socioecological levels to make disease prevention decisions.

Individual-level cultural factors—language and health beliefs. Culture influences individuals' communication about health. Chinese immigrants who need interpretation to overcome language barriers may experience feelings of embarrassment and loss of status because of the breach of privacy in Chinese health culture (Kemp & Rasbridge, 2004). Furthermore, the hierarchical social structure in Chinese culture may contribute to the feeling of discomfort among older Chinese immigrants who must rely on younger family members for interpretation. Their family members may not convey health care professional's guidance and information accurately to avoid conflict, given Chinese culture values group harmony.

Culture also shapes individuals' health beliefs and behaviours (e.g., Health Belief Model). For example, Chinese individuals who believe that internal imbalance causes disease tend to use herbal tea and soup, avoid cold drinks and food, and keep warm to prevent influenza rather than be vaccinated (Kwong & Lam, 2008; Tzeng & Yin, 2006). Cultural health beliefs also determine the appropriate caregivers and the preferred prevention method. In Chinese culture, self-care using TCM is preferred because seeing a physician without any symptoms is considered to be shameful, bad luck, and bothersome (Chen et al., 2010; Clough, Lee, & Chae, 2013; Lai & Chau, 2007; Waxler-Morrison et al., 2005). Finally, cultural health beliefs influence coping strategies. For instance, Chinese immigrants may respond with avoidance and fatalism by "believing in one's good health" rather than choosing to be vaccinated for influenza (Kwong & Lam, 2008).

Microlevel cultural factor—family social support network. Culture affects the role interpersonal networks play in an individual's health. The family plays a major role in health in Chinese culture (Kemp & Rasbridge, 2004). For example, familial social support is positively associated with health care utilization (Liu et al., 2014, 2015; Miltiades & Wu, 2008; Pang et al., 2003). Older Chinese immigrants may expect their adult children to make medical decisions for them because Chinese culture values filial piety (Kemp & Rasbridge, 2004). However, conflicting medical advice among family members may delay seeking professional help (Liu et al., 2015). Chinese immigrants may also make medical

decisions based on what is best for the family rather than what is best for the individual (Waxler-Morrison et al., 2005).

Meso-level cultural factor—patient-practitioner relationship. Culture shapes how individuals define an appropriate patient-practitioner relationship. In Chinese culture, the patient-practitioner relationship is doctor-centred such that physicians are expected to provide detailed instructions and make final decisions regarding health care (Clough et al., 2013; Waxler-Morrison et al., 2005). The patient-practitioner relationship in Chinese culture is in contrast with the Western culture that involves physicians negotiating options with their patients, called the patient-centred care. Chinese immigrants who prefer doctor-centred care may perceive discussions between the patient and the practitioner as physician incompetence. The concept of "family doctor" is unfamiliar in Chinese culture (Ma, 1999). Therefore, Chinese immigrants may be less likely to build rapport with physicians, and they may be more likely to consult multiple health care professionals simultaneously. They may also be more trusting of health care practitioners with ethnicity and gender similar to their own.

Macrolevel cultural factors—health care system. Culture influences the structure and operation of health care systems. Health care facilities in China, Hong Kong, and Taiwan use the Western-Chinese integrative health care system where patients have access to both Western medicine and TCM (Waxler-Morrison et al., 2005). These health care facilities also use the "pay-for-care" system, which allows patients to see multiple practitioners, visit specialists without a referral, and pay for immediate access to care. Therefore, Chinese immigrants may have difficulties adjusting to the health care facilities in the host community that utilizes the Western biomedical model and "wait-for-care" system. For example, long wait-time for appointments and treatments limited to Western medicine may deter Chinese immigrants from using health care services (Aroian et al., 2005; Marshall, Wong, Haggerty, & Levesque, 2010; Wang et al., 2008).

Table 1 summarizes the acculturation and cultural factors in preventive health as they may relate to immigrants' preventive health behaviours at multiple socioecological levels.

Evaluation of Culturally Adapted Influenza Vaccination Programs

Cultural adaptation of health programs involves the systematic tailoring and targeting of approaches to recruit, engage, and retain a population that experiences health disparities and limited access to standard health care resources (Castro, Barrera, & Holleran Steiker, 2010; Resnicow, Soler, Braithwaite, Ahluwalia, & Butler, 2000). Surface-structure modifications involve changing observable features to increase feasibility and acceptance such as using materials, channels, and settings that are familiar to and preferred by the target group for program delivery. Deep-structure modifications address underlying social environmental factors (e.g., cultural health beliefs and social determinants of health) to facilitate salience and efficacy. We aim to understand how existing culturally adapted influenza vaccination programs address the unique needs and concerns of immigrant subgroups. To this end, we conducted a systematic review of culturally adapted influenza vaccination programs and an assessment of the cultural sensitivity of these programs to Chinese immigrants. We evaluated to what extent these programs conceptually address multilevel accultura-

Table 1

A Multi-Level Perspective in Acculturation and Cultural Factors in Preventive Health With Chinese Immigrants as an Example

Acculturation and culture	General description	Cultural consideration for Chinese immigrants
Individual-level factors		
Competence in host language	<ul style="list-style-type: none"> • Understand and express health concerns • Handle health care administration • Access to and use of health care services • Personal interaction with health care practitioners—build rapport and trust 	<ul style="list-style-type: none"> • Low proficiency in the host language decreases competence and willingness to seek professional help • Hierarchical social structure, need for privacy, and need for group harmony impede translation, especially for older Chinese immigrants
Health-seeking behaviour		
Information seeking	<ul style="list-style-type: none"> • Preference for certain sources and language for health information 	<ul style="list-style-type: none"> • Seek multiple formal and informal sources • Preference for information in Chinese among those with language barriers
Preference for care	<ul style="list-style-type: none"> • Preference for particular caregiver and method for prevention 	<ul style="list-style-type: none"> • TCM and self-care preferred for prevention • Incorporate Western medicine
Seeking social support	<ul style="list-style-type: none"> • Relevance of social support in decision-making 	<ul style="list-style-type: none"> • Family social support is preferred • Rely on friends if family is unavailable but may delay seeking professional help because health is a private family affair
Traditional health beliefs		
Cause of illness	<ul style="list-style-type: none"> • Etiological understanding of disease affects prevention method used 	<ul style="list-style-type: none"> • Chinese health beliefs regarding internal harmony, preference for self-care using TCM, and avoidance and fatalistic coping affect compliance with Western approach to preventive health care
Prevention behaviour	<ul style="list-style-type: none"> • Choice of caregiver, prevention method, and coping strategy 	<ul style="list-style-type: none"> • Challenges with communication and trust with Western biomedical approaches • Believe in seeing physicians for prevention is bad luck, troublesome, and shameful, which deter Chinese immigrants from seeking professional help
Length of stay: Circumstances related to being “new”	<ul style="list-style-type: none"> • Do not know where to seek care • Lack of medical coverage due to arrival status 	<ul style="list-style-type: none"> • Geographic and economic barriers impede Chinese immigrants’ health care utilization
Micro-level factor		
Social support network	<ul style="list-style-type: none"> • Important interpersonal networks for social support • Prescribes roles in decision-making 	<ul style="list-style-type: none"> • Familial social support is important for Chinese immigrants’ decision-making due to filial piety and the need for privacy in health • Make decisions for the family
Meso-level factor		
Patient-practitioner relationship	<ul style="list-style-type: none"> • Prescribes appropriate patient-practitioner interaction—affect trust and compliance 	<ul style="list-style-type: none"> • Chinese culture values doctor-centred relationship • Concept of family doctor is not part of the culture—hence, Chinese immigrants may not build rapport with physicians and may see multiple practitioners simultaneously • Preference for Chinese and same-gender practitioners
Macro-level factor		
Health care system in the host community	<ul style="list-style-type: none"> • Past experience with health care in the home country may affect adjustment to the health care system in the host community 	<ul style="list-style-type: none"> • Chinese immigrants may be accustomed to integrative Western-Chinese health care facilities and immediate access to care • Treatment options limited to Western medicine and long wait-time may deter seeking professional help
Policies: Health care and immigration	<ul style="list-style-type: none"> • Administrative issues such as eligibility for medical coverage 	<ul style="list-style-type: none"> • Administrative issues deter Chinese immigrants from participating in primary care and preventive services

tion and cultural factors in preventive health behaviours for Chinese immigrants (see Table 1). The research questions were: (a) who are the target clients?, (b) what are the impacts of these programs on influenza vaccination uptake?, (c) what are the programs’ anatomies of cultural sensitivity?, and (d) what is the depth of cultural sensitivity of these programs to a specific immigrant subgroup (i.e., Chinese immigrants)?

Method

We conducted a systematic literature search of peer-reviewed studies between October 2014 and September 2015 to identify pertinent studies in PsychArticles, PubMed, Scopus, Web of Science, Allied

and Complementary Medicine, Embase, Ovid Healthstar, MEDLINE, PsycINFO, the Joanna Briggs Institute of Evidence-Based Practice, Cochrane Evidence-Based Reviews, Cumulative Index to Nursing and Allied Health Literature, Anthropology Plus, and JSTOR databases. We used the following keywords: *influenza, flu, vaccine, shot, vaccination, program, intervention, campaign, adaptation, culturally adapted, culturally sensitive, multicultural, culture, ethnicity, race, immigrants, foreign-born, newcomers, Chinese, Asian, cultural group, ethnic group, racial group, and minority*. The inclusion criteria were: (a) the target population was ethnic minority adults or adult immigrants in general or specific to Asians or Chinese ancestry because Chinese immigrants can access these programs, given their

ethnic minority and foreign-born status; (b) the program was conducted in a developed Western country; and (c) the study reported the program's effect on influenza vaccination receipt. We identified 29 articles based on their titles. From these, we excluded 10 studies because they did not fulfil the inclusion criteria based on the abstract. Thus, we selected 19 articles to be fully read. We included 10 studies in the formal review because they met the inclusion criteria. We extracted the study design, outcomes, and cultural anatomy from each article. Finally, we examined the cultural sensitivity of these programs to Chinese immigrants by considering whether the program's cultural anatomy could conceptually address the factors presented in Table 1.

Results

The review included 10 studies conducted between 2007 and 2014 in the United States ($n = 9$) and England ($n = 1$, see Table 2).

Sample and target population. Participants were mostly African Americans and Latinos. These programs were generally for ethnic minorities and immigrants with low SES in urban areas. Three studies included immigrants in the program design (Table 2, Studies 1, 5, 8), but these studies did not distinguish foreign-born individuals from native-born ethnic minorities. Three studies included Asians in their samples (Table 2, Studies 2, 5, 7), but only one study had exclusively Asians (Table 2, Study 7). Most studies did not use a homogenous sample according to ethnic minority or immigrant status.

Effect on influenza vaccination receipt. The reviewed studies used self-report (Table 2, Studies 1–4, 8, 10) or patient registry (Table 2, Studies 5–7, 9) to measure influenza vaccination receipt. Four studies reported participants who received the program were significantly more likely to be vaccinated compared with the control group (Table 2, Studies 2, 6, 9, 10). Two studies reported a significant increase in postintervention vaccination rate compared with baseline (Table 2, Studies 4, 8). Three studies reported increments in immunization coverage of at least 70% postintervention that was higher than the national rate (Table 2, Studies 5, 7, 10). One study reported that the hard-to-reach population was significantly more likely to be vaccinated through the program compared with the standard program (Table 2, Study 1). One study did not observe a significant change in vaccination rate (Table 2, Study 3).

Recruitment and outreach. The commonly used recruitment strategies were recruiting clients of faith organizations (Table 2, Study 2), community agencies (Table 2, Studies 1, 4, 8), residential facilities (Table 2, Studies 7, 10), and health care centres (Table 2, Studies 5, 6, 9) using mailed and telephone invitations. Five programs conducted public outreach activities through door-to-door, street-based, and venue-based dissemination of written materials, as well as media promotion (Table 2, Studies 1, 3, 4, 8, 9). Last, three studies used peer referrals through telephone contact and face-to-face interaction (Table 2, Studies 4, 8, 10).

Program activities. The primary activity was education through written materials, electronic media, telephone hotline, group discussion, and personal consultation about influenza, immunization, and location of free or low-cost vaccination clinics. Three programs provided free influenza vaccination services or coupons (Table 2, Studies 1, 2, 9). Four studies reminded participants to see their health care practitioners (Table 2, Studies 2, 5, 6, 9). Two programs used peer support, peer educators, and testi-

monials (Table 2, Studies 4, 10). Three programs featured rewards, contests, and treats to encourage participants (Table 2, Studies 4, 9, 10). Two programs provided items to prevent influenza such as masks, thermometers, and hand sanitizer (Table 2, Studies 5, 9). Six programs used alternative vaccination service delivery such as home visits, walk-in clinics, and nonmedical venues (Table 2, Studies 1, 2, 6, 7, 9, 10). One program hosted a flu shot fair that was an exhibition to promote influenza vaccination (Table 2, Study 10). Two programs provided free transportations to health care centres (Table 2, Studies 5, 6). Three programs conducted health care provider education on influenza vaccination disparities in the target groups (Table 2, Studies 5, 7, 9). Four programs used standing orders, patient tracking, and health care provider reminders to prevent missed opportunities for vaccination (Table 2, Studies 5–7, 9). One program featured a most prolific vaccinator contest where health care professionals compete to vaccinate the most number of patients (Table 2, Study 9). Finally, two programs trained staff at the residential facilities to help facilitate the program (Table 2, Studies 7, 10). We evaluated these program activities for their surface- and deep-structure components.

Surface-structure components. The most salient surface-structure component was bilingual materials and staff (Table 2, Studies 1, 3, 5, 7, 8–10)—one program used back-translation (Table 2, Study 10), and two programs used multiethnic representative staff (Table 2, Studies 5, 10). Nine programs used familiar and preferred locations such as participants' homes (Table 2, Studies 1, 6–8, 10), religious organizations (Table 2, Study 2), and health care centres (Table 2, Studies 5, 6, 9). Other surface-structure components that were less common included culturally competent case workers (Table 2, Study 5), peer support (Table 2, Studies 4, 10), and role model (Table 2, Studies 4, 10).

Deep-structure components. The most prominent deep-structure component was addressing geographic barriers to health care services and education through vaccination at a non-health care facility (Table 2, Studies 1, 2, 6, 7, 9, 10), education at familiar locations (Table 2, Studies 1, 2, 7–9, 10), and provision of transportation to health care centres (Table 2, Studies 5, 6). Five programs utilized the role of social support networks by including friends, families, and neighbours in vaccination efforts (Table 2, Studies 2, 4, 7, 9, 10). Three programs addressed health care provider barriers by increasing health care providers' awareness, motivation, and capability to serve high-risk patients (Table 2, Studies 5, 6, 9). Two programs addressed patient-practitioner relationship by employing a patient-centred approach (Table 2, Studies 5, 6). Three programs featured family-based elements by incorporating family values in messaging and providing activities for all ages (Table 2, Studies 7, 8, 10). Other deep-structure components included utilizing incentive-based activities (Table 2, Studies 4, 9, 10), circumventing economic barriers by providing free vaccine (Table 2, Studies 1, 2, 9), targeting cultural health beliefs (Table 2, Study 10), using appropriate literacy level (Table 2, Study 3), incorporating religion (Table 2, Study 2), and including social norms (Table 2, Study 10) in the programs.

Proposed Framework

Based on the reviewed literature, we derived a conceptual framework including acculturation and cultural factors positioned

Table 2
Programs Aiming to Increase Uptake of Influenza Vaccination in Ethnic Minorities and Immigrants

Study	Author(s), year of publication	Study design	Target population	Recruitment and outreach	Program activity	Cultural anatomy		Results
						Surface-structure	Deep-structure	
Study 1	Coady et al. (2008)	New York, USA Nonexperimental design • Pilot and rapid vaccination phases	Hard-to-reach groups: Immigrants, substance abusers, homeless persons, sex workers, and homebound elderly • 8 ethnically diverse low SES neighbourhoods • 6,826 adults of at least 19 years old: 37% member of at least one of the hard-to-reach groups, 72% Hispanic	<ul style="list-style-type: none"> • Door-to-door • Street-based • Community leaders and groups 	<ul style="list-style-type: none"> • Flyers • Comic strips • Pamphlets • Information hotline • Free door-to-door vaccination • Contact information for free/low-cost vaccination clinics 	<ul style="list-style-type: none"> • Bilingual materials • Bilingual staff • Home-based activities 	<ul style="list-style-type: none"> • Addressed economic barrier: e.g., free vaccine • Addressed geographic barriers: e.g., door-to-door vaccination 	<ul style="list-style-type: none"> • Seasonal influenza • Increased interest in vaccination ($p < .01$) • Hard-to-reach groups were more interested in vaccination ($p = .03$), including immigrants ($p < .01$) • Receipt of free door-to-door vaccination: 27% vaccination rate (52% hard-to-reach group) during pilot vaccination, 46% vaccination rate (47% hard-to-reach group) during rapid vaccination
Study 2	Daniels, Juarbe, Moreno-John, and Pérez-Stable (2007)	California, USA Quasi-experimental design with control • Control: Vaccine education • Intervention: Vaccine education, on-site vaccination	Ethnic minorities living in low SES urban neighbourhoods • 15 churches • 186 parishioners of at least 65 years old: 44% African American, 43% Latino, 3% Asian, 2% others	<ul style="list-style-type: none"> • Pastors after church service • Churches 	<ul style="list-style-type: none"> • Church-based group discussion • Pamphlets • Slide presentation • Vaccination reminders • Free on-site vaccination 	<ul style="list-style-type: none"> • Location familiar to participants 	<ul style="list-style-type: none"> • Incorporated religion: e.g., pastors conveyed how the program was consistent with the churches' missions • Addressed economic barrier: e.g., free vaccine • Used social support network: e.g., group discussion • Addressed geographic barriers: e.g., on-site vaccination 	<ul style="list-style-type: none"> • Seasonal influenza • Intervention group was more likely to be vaccinated ($p < .001$)

(table continues)

Table 2 (continued)

Study	Author(s), year of publication	Study design	Target population	Recruitment and outreach	Program activity	Cultural anatomy		Results
						Surface-structure	Deep-structure	
Study 3	Frew, Saint-Victor, Owens, and Omer (2014)	Georgia, USA Experimental design <ul style="list-style-type: none"> Control: Standard information sheet Intervention gain-frame: Benefits of vaccination message Intervention loss-frame: Costs of not receiving vaccination message 	Pregnant ethnic minority women <ul style="list-style-type: none"> 276 women between 18–50 years old: 86% African American, 7% Latino 	<ul style="list-style-type: none"> Venue-based recruitment 	<ul style="list-style-type: none"> Fact sheets 	<ul style="list-style-type: none"> Bilingual materials 	<ul style="list-style-type: none"> Materials appropriate to literacy level 	<ul style="list-style-type: none"> Seasonal influenza No significant difference across groups
Study 4	Holland, Everitt, Johnson, and Devi (2008)	West Midlands, England Nonexperimental design <ul style="list-style-type: none"> Monitoring at 3 time points: 0-point (i.e., baseline), 15-point, 30-point 	Older adults living in a low SES multiethnic area <ul style="list-style-type: none"> 186 adults of at least 50 years old: 17% Indian, 36% Afro-Caribbean 	<ul style="list-style-type: none"> Peer recruitment Newspaper ads Posters in community groups 	<ul style="list-style-type: none"> Point-based health activities including influenza vaccination uptake (free for 65 years old and above) from designated health care providers Peer group support Contact information for free/low-cost vaccination clinics 	<ul style="list-style-type: none"> Delivered by peers 	<ul style="list-style-type: none"> Used social support network: e.g., peer delivery Incentive-based 	<ul style="list-style-type: none"> Seasonal influenza Increased vaccination rate by 15-point ($p < .05$) By 15-point, 100% vaccination rate

Table 2 (continued)

Study	Author(s), year of publication	Study design	Target population	Recruitment and outreach	Program activity	Cultural anatomy		Results
						Surface-structure	Deep-structure	
Study 5	Hoppe and Eckert (2011)	Washington, USA Retrospective nonexperimental design	Pregnant ethnic minority women and pregnant non-English speaking immigrant women • 157 patients: 25% African American, 46% West/East African, 6% Pacific Islander/Asian, 1% Native American, 10% Hispanic	• Contacted by health care centres	<ul style="list-style-type: none"> • Written literature • Waiting room video • Patient invitation • Taxi transportation • “Flu packs” containing masks, thermometers, and hand sanitizer • Provider education • Provider reminders • Patient tracking • Standing orders 	<ul style="list-style-type: none"> • Multilingual materials • Bilingual multithetic staff including certified medical interpreters • Culturally competent staff including cultural case workers • Location familiar to participants 	<ul style="list-style-type: none"> • Addressed geographic barriers: e.g., taxi • Addressed provider barriers: e.g., provider education • Addressed patient-practitioner relationship: e.g., building relationship through personal invitations 	<ul style="list-style-type: none"> • H1N1 influenza • Achieved 76% vaccination rate, higher than the national rate (38%) and 10-state (47%) coverage rate for pregnant women
Study 6	Humiston et al. (2011)	New York, USA Quasi-experimental design • Control: Standard care routine at primary care centres (PCCs) • Intervention: Program at PCC was tailored	Ethnic minority older adults living in ethnic minority urban neighbourhoods • 7 PCCs • 3,752 patients of at least 65 years old: 33% African American, 10% Hispanic, 7% other	• Contacted by PCCs	<ul style="list-style-type: none"> • Patient tracking • Provider reminders • Patient reminders • Patient invitation • Telephone consultation • Tokens for bus and taxi • Nursing visits 	<ul style="list-style-type: none"> • Location familiar to participants 	<ul style="list-style-type: none"> • Addressed provider barriers: e.g., provider reminder • Addressed patient-practitioner relationship: e.g., use of patient-centred approach • Addressed geographic barriers: e.g., taxi and bus 	<ul style="list-style-type: none"> • Seasonal influenza • Intervention group was more likely to be vaccinated ($p < .001$) including across all ethnic groups ($p < .001$) • Ethnic disparities in vaccination rate remained with Hispanics having the lowest vaccination rate ($p < .001$)

(table continues)

Table 2 (continued)

Study	Author(s), year of publication	Study design	Target population	Recruitment and outreach	Cultural anatomy			Results
					Program activity	Surface-structure	Deep-structure	
Study 7	Lam and Chung (2008)	Seattle, USA Retrospective nonexperimental design	Low SES Asian older adults in multiethnic assisted living facility • 58 adults: Asian immigrants	<ul style="list-style-type: none"> Posted and mailed notices 	<ul style="list-style-type: none"> Residents/clients education Staff education Provider (i.e., pharmacists) education Family education Vaccine information statements Patient tracking On-site vaccination 	<ul style="list-style-type: none"> Bilingual materials Home-based activities 	<ul style="list-style-type: none"> Family-based: e.g., family education Used social support network: e.g., family and staff involvement Addressed provider barriers: e.g., patient tracking Addressed geographic barriers: e.g., on-site vaccination 	<ul style="list-style-type: none"> Seasonal influenza Achieved 83% vaccination rate; higher than last year's vaccination rate (65%)
Study 8	Larson et al. (2010)	New York, USA Experimental design • Control: Education materials only • Intervention 1: Education materials, hand sanitizer • Intervention 2: Education material, hand sanitizer, face mask • Supplies delivery once every 2 months over a 19-month period	Non-English speaking immigrants and ethnic minorities living in crowded urban households • 509 households • 2,788 adults of at least 18 years old: 96% Latino; 54% foreign-born	<ul style="list-style-type: none"> Peer referrals Community groups Flyers in community 	<ul style="list-style-type: none"> Written materials Hand sanitizer Face masks 	<ul style="list-style-type: none"> Bilingual materials Bilingual staff Home-based activities 	<ul style="list-style-type: none"> Addressed geographic barriers: e.g., home education Addressed vaccination 	<ul style="list-style-type: none"> Seasonal influenza Increased vaccination rate with at least 50% of the household members were vaccinated ($p < .001$) Hand sanitizer group was more likely to be vaccinated ($p < .01$)

Table 2 (continued)

Study	Author(s), year of publication	Study design	Target population	Recruitment and outreach	Program activity	Cultural anatomy		Results
						Surface-structure	Deep-structure	
Study 9	Nowalk et al. (2008)	<p>Pennsylvania, USA</p> <p>Quasi-experimental design</p> <ul style="list-style-type: none"> Control: No contact until data collection Intervention: 4-year intervention activities tailored to each site 	<p>Ethnic minority older adults living in ethnic minority low SES urban neighbourhoods</p> <ul style="list-style-type: none"> 5 inner-city health centres (i.e., 2 faith-based, 3 medical care) 568 patients of at least 50 years old: 61% ethnic minority 	<ul style="list-style-type: none"> Contacted by health care centres Posters and flyers in community 	<ul style="list-style-type: none"> Standing orders Provider education Posters Waiting room videos Patient reminders Free flu shot coupons Walk-in immunization clinics Provider reminders Non-health care immunization clinics Nursing visits Poster contest at clinics Most prolific vaccinator contest Treats during vaccination 	<ul style="list-style-type: none"> Bilingual materials with cultural sensitive images Bilingual staff Culturally competent staff Location familiar to participants 	<ul style="list-style-type: none"> Addressed provider barriers: e.g., education Addressed economic barrier: e.g., free vaccine Addressed geographic barriers: e.g., non-health care clinics Incentive-based: e.g., contest 	<p>Seasonal influenza</p> <ul style="list-style-type: none"> Higher vaccination rate in intervention group for year 1, year 3, and year 4 across all ethnic groups ($p < .001$), including ethnic minorities ($p < .001$) Increased vaccination rate in intervention group across all ethnic groups ($p < .001$), including ethnic minorities ($p < .001$) Individuals at the intervention sites were more likely to be vaccinated ($p < .001$) No evidence for racial disparities postintervention

(table continues)

Table 2 (continued)

Study	Author(s), year of publication	Study design	Target population	Recruitment and outreach	Program activity	Cultural anatomy		Results
						Surface-structure	Deep-structure	
Study 10	Schensul, Radda, Coman, and Vazquez (2009)	Connecticut, USA Quasi-experimental design • Control: No contact until data collection • Intervention: Program tailored to building • Flu clinics available at both sites	Ethnic minority older adults with low SES • 2 residential buildings • 387 adults of at least 18 years old: 48% Latino, 27% African American, 7% West Indian; mean length of time in the United States = 26.6 years	• VIP committee recruited residents through posters, flyers, and direct contact • Peer referrals	• Peer health "VIP" educators • Flu fairs • Poster contest • Question-answer period • Child flu-related games • Information table • Free lunch • Film • Video testimonial from VIP	• Bilingual, multietnic staff that represented the building's population • Bilingual materials • Home-based activities • Back-translation used • Peer role model	• Used social support network: e.g., peer residents in the building • Addressed geographic barriers: e.g., in-building vaccination • Addressed social norms in materials • Addressed cultural factors: e.g., cultural health beliefs in materials • Family-based activities: e.g., flu fairs • Incentive-based: e.g., contest	Seasonal influenza • Higher vaccination rate in intervention group ($p = .02$) • Latinos were more likely to be vaccinated compared with African Americans ($p < .01$) • Reached optimum 70% target for herd immunity in the intervention building (71%)

alongside the program's cultural anatomy using influenza vaccination for Chinese immigrants as an example (see Figure 1).

Cultural sensitivity of the influenza vaccination programs to Chinese immigrants. None of the reviewed programs was adapted solely for Chinese immigrants, as all programs were for ethnic minorities and immigrants in general. One program that focused on Asians (Table 2, Study 7) treated Asians as a homogeneous group, despite the cultural diversity in Asian subgroups (see Kemp & Rasbridge, 2004). Furthermore, programs that mixed immigrants and native-born ethnic minorities in the target population may be less effective in meeting certain needs and concerns that are more salient for immigrants.

Regarding the surface-structure components, two programs (Table 2, Studies 5, 7) may be accessible to Chinese immigrants with language barriers if these resources included the Chinese language. The paucity of Chinese resources may reduce their trust, compliance, and competence to seek influenza vaccinations, given the importance of host language competence for immigrants to navigate the health care system in the host community. Furthermore, Chinese cultural values of hierarchical social structures, need for privacy, and need for group harmony may impede interpretation, especially for older Chinese immigrants. Using multiple channels and settings may be an effective outreach strategy for Chinese immigrants, given Chinese immigrants tend to seek multiple health information sources. However, the lack of resources in Chinese may derail the effectiveness of this strategy for Chinese immigrants with language barriers. Further, programs that targeted clients of organizations may only be accessible to Chinese immigrants who are already connected to these organisations (Table 2, Studies 1, 2, 4–10). Outreach using familiar organizations may increase a program's perceived credibility. Programs that used street-based, door-to-door, and venue-based outreach (Table 2, Studies 1, 3, 4, 8, 9) may be more accessible to hard-to-reach Chinese immigrants such as those who are not connected to community organizations. Peer referrals may be an appropriate program feature for Chinese immigrants (Table 2, Studies 4, 8, 10), given the importance of nonfamilial social support for Chinese immigrants' health behaviours. Home-based activities and familiar locations (Table 2, Studies 1, 2, 5–10) may be helpful for Chinese immigrants who may not know where to obtain influenza vaccination information and services. Additionally, Chinese immigrants who value privacy in health issues may not have to rely on "outsiders" to find these resources. As Chinese culture values doctor-centred care, influenza vaccination directives coming from a health care centre (Table 2, Studies 5, 6, 9) may be perceived as credible. The use of multiethnic representative culturally competent staff (Table 2, Studies 5, 10) may reduce cultural discordance, and thus foster compliance and trust for Chinese immigrants who prefer ethnically matched health care providers.

In terms of deep-structure components, using appropriate literacy level in the materials (Table 2, Study 3) may enhance patient compliance and comprehension (Safeer & Keenan, 2005). Programs that addressed geographic barriers through non-health care immunization clinics (Table 2, Studies 1, 2, 6, 7, 9, 10), transportation provision (Table 2, Studies 5, 6), familiar locations (Table 2, Studies 1, 2, 5–10), and home-based activities (Table 2, Studies 1, 6, 7–10) would be appropriate for Chinese immigrants who have difficulties accessing health care information and services. Programs that addressed geographic barriers to health care may be

valuable for new Chinese immigrants who tend not to know where to seek health care services. Walk-in clinic, home-based, and street-based influenza vaccination delivery (Table 2, Studies 1, 2, 6, 7, 9, 10) align with Chinese immigrants' preference for immediate access to care and reduce the complexity of navigating the health care system. Programs that incorporated individuals' social support networks (Table 2, Studies 2, 4, 7, 9, 10) may be pertinent for Chinese immigrants, given Chinese immigrants may depend on their social support networks for influenza vaccination decision-making. Although it is important for programs to address health care provider barriers to improve the services provided to Chinese immigrant patients (Table 2, Studies 5–7, 9), Chinese immigrants who are not connected to these health care providers may still be excluded from influenza vaccination. Further, those who prefer TCM or lack rapport with their family doctors may choose not to respond to their health care professionals' recommendations. Additionally, Chinese immigrants who are accustomed to doctor-centred care may perceive programs with patient-centred care (Table 2, Studies 5, 6) to be incompetent. Family-based elements (Table 2, Studies 7, 8, 10) may be appropriate for Chinese immigrants who value the role of the family in health decision-making. Finally, circumventing economic barriers by providing free vaccination (Table 2, Studies 1, 2, 9) would allow Chinese immigrants who do not have medical coverage to obtain influenza vaccinations.

Only one program addressed cultural health beliefs, but it was not specific to the Chinese culture (Table 2, Study 10). The lack of consideration for cultural health beliefs in these programs is a limitation because research shows cultural perception and understanding of influenza vaccination are associated with influenza vaccination uptake (Kwong & Lam, 2008; Tzeng & Yin, 2006). Research suggests social norm is an important aspect in vaccinating behaviours (e.g., Allen et al., 2009), although it is difficult to account for the actual norm, particularly when the influenza vaccination rate in the United States and Canada is low. Then again, activities targeting individuals' social support networks and social norms (Table 2, Studies 2, 4, 7, 8, 10) may help to cultivate a provaccine environment that is bounded within the social and family life domains. These life domains are important to adult immigrants (Birman et al., 2014; Genkova et al., 2014). It is unclear how an incentive-based approach (Table 2, Studies 4, 9, 10) is culturally relevant for Chinese immigrants, although studies show incentive-based vaccination programs are more effective than usual care (e.g., Mantzari, Vogt, & Marteau, 2012). Therefore, this component may be a useful program feature to increase individuals' motivation to uptake influenza vaccination.

Discussion

To better engage immigrants in preventive health care programs, we proposed a conceptual framework summarizing the acculturation and cultural factors related to a program's cultural anatomy to increase preventive health behaviours among immigrants. We used influenza vaccination among Chinese immigrants as an example by reviewing 10 adapted influenza vaccination programs to investigate how these programs are culturally sensitive to immigrant subgroups at multiple socioecological levels.

Implications for Research

Research on how acculturation and cultural factors relate to immigrants' health care utilization for disease prevention is limited. Most studies tend to use demographic proxies to measure acculturation, specifically language proficiency and length of stay. This approach reflects the underlying assumption that acculturation is unidimensional, despite the accumulating evidence demonstrating that acculturation is multidimensional (Birman et al., 2014; Schwartz et al., 2011). The relationship between acculturation and the degree to which individuals identify with their own culture is unlikely to be linear. These cultural elements may manifest in an immigrant's language, behaviour, and identity at different socioecological levels during acculturation to shape preventive health behaviours. Future research needs to investigate how various dimensions of acculturation and culture affect preventive health behaviours. Specific to our case study, most of the reviewed programs tend to commit ethnic gloss by treating immigrants and ethnic minorities as a homogeneous population. By considering immigrant status as synonymous with ethnic minority status, research downplays the role of the host community's social environment, the unique risk and protective factors, and the immigration process in shaping immigrants' health behaviours and outcomes. Future research should better define the parameters of target groups by selecting subgroups that share similar social, cultural, contextual, and structural experience, which is a crucial step to disentangle ethnic minority status from immigrant status.

Implications for Practice

The proposed framework provides a basic guideline to help implement and interpret factors that may influence immigrants' preventive health behaviours from a multilevel perspective. This perspective acknowledges that the immigrant condition is not limited to the individual, but a complex system of interrelated, nested components and mechanisms. In our case study, most of the reviewed programs focused on changing the superficial features of the program (e.g., language, mode of content delivery) without considering the in-depth role of culture and acculturation play in influenza vaccination behaviour (see Table 1 and Figure 1). There is a lack of consideration on how cultural health beliefs may shape the perception, understanding, and response to program activities, as well as economic, sociopolitical, and historical context. For example, Chinese individuals' experience with the negative backlash from previous emergent respiratory outbreaks, such as the Severe Acute Respiratory Syndrome outbreak in 2003 and H1N1 outbreak in 2009, may have lower trust and compliance toward authorities due to fear and stigma (Eichelberger, 2007; Person et al., 2004). These limitations are in part related to the lack of specificity in population segmentation. Although most of the reviewed programs were successful in increasing influenza vaccination receipt, these programs may not be accessible to certain immigrant subgroups that have sociocultural needs and concerns that are not addressed by the program design.

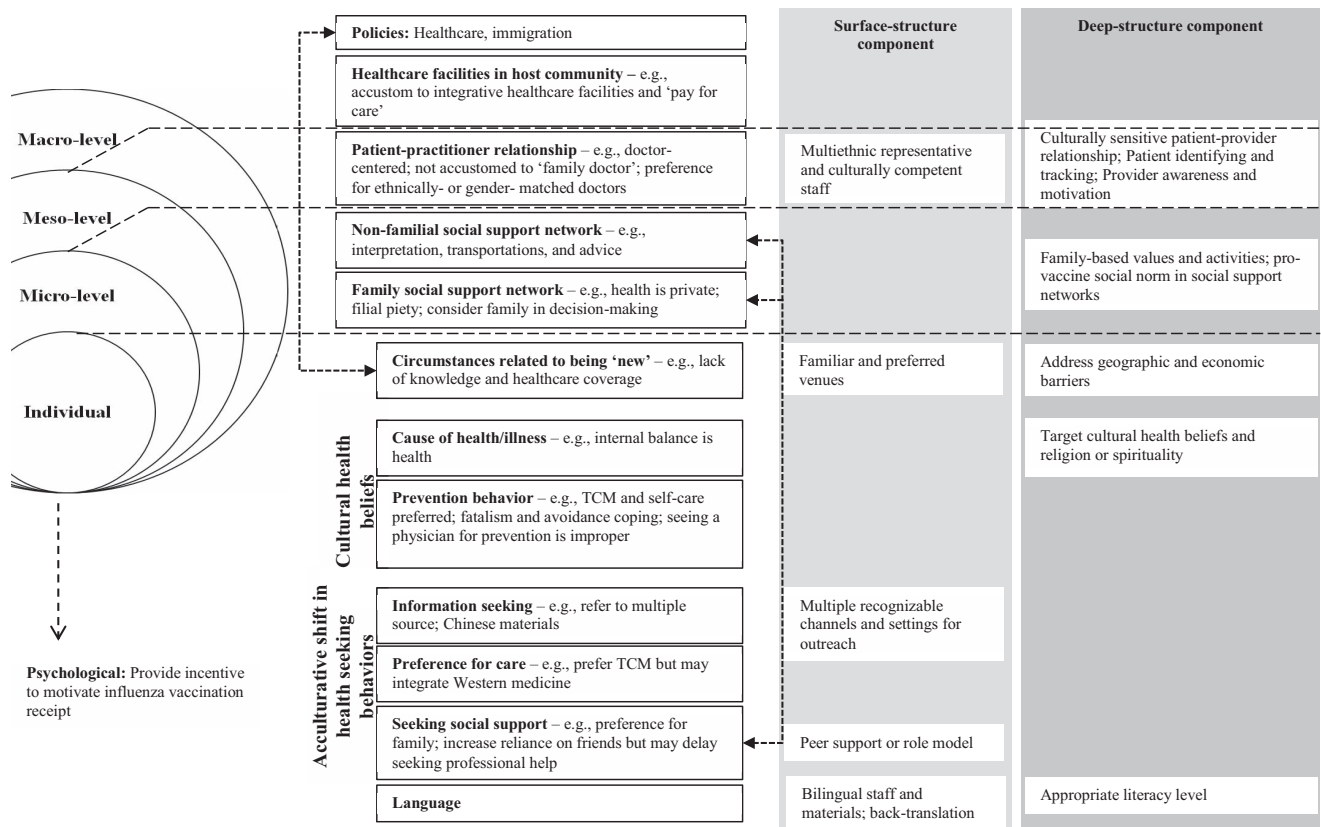


Figure 1. Proposed framework for cultural adaptation of preventive health programs using influenza vaccination for Chinese immigrants as an example.

Some recommendations based on the proposed framework include: (a) use appropriate language and literacy level; (b) tailor mode of content delivery to a target group's health-seeking behaviours; (c) work with community representatives with "insider knowledge" to address cultural factors related to preventive health behaviours and translate these cultural factors into appropriate program activities; (d) provide resources to help circumvent health care barriers and challenges related to immigrant status by taking into account public policies; (e) identify and include important social support networks to leverage social norms; (f) increase health care providers' capacity to establish culturally sensitive patient-practitioner relationships and resources; (g) use outreach activities by targeting trusted channels and settings, as well as using various formats for messaging; and (h) form partnerships with traditional health care services and community agencies that immigrants trust to create culturally meaningful programs.

Researchers and practitioners who intend to apply this framework need to be cognizant that not all immigrants go through the same acculturation process; hence, future studies need to use careful population segmentation. A fundamental step to avoid ethnic gloss is to document an immigrant subgroup's cultural health beliefs for a particular health issue and experiences with the host community's health care system using qualitative interviews (e.g., Kleinman & Benson, 2006). This strategy may help increase the understanding of their illness narratives and current preventive health behaviours. Researchers and practitioners also need to be aware of how their culture affects their perceptions and understandings of health. The proposed framework should not be considered as an ethnic trait checklist, but rather be used as a guide to increase awareness of psychosocial considerations for preventive health programs for immigrants.

Limitations and Future Directions

A limitation of the proposed framework is that it may be a simplification of how acculturation and cultural factors shape immigrants' preventive health behaviours, given this is a complex process. For instance, it does not fully account for the psychodynamic implications of acculturation on immigrants' preventive health behaviours such as the impact of immigration trajectory on influenza vaccination receipt. An inherent challenge with cultural adaptation of health programs is to identify which cultural anatomy is directly accountable for behavioural change. Although the proposed framework acknowledges macrolevel systemic barriers, a better understanding of how these systemic barriers affect immigrants' preventive health behaviours requires policy, historical, and economic analyses that are best conducted through interdisciplinary research. Future research should help define other factors and pathways that are meaningful to an immigrant subgroup's preventive health behaviours. Empirical validation of the proposed framework should include identifying and mapping pathways, randomized control trials, as well as program evaluation. Notwithstanding these limitations, the proposed framework provides a socioecological perspective in guiding future research and practice. It illustrates the importance of targeting and tailoring approaches to specific immigrant subgroups, and the role of acculturation and cultural factors nested within the host community's social environment in affecting immigrants' access to preventive health care services. That is, the interaction between immigrants'

personal characteristics and the host community's social environment plays a vital role in immigrants' preventive health behaviours.

Résumé

Susciter l'engagement des immigrants à l'égard des programmes de soins de santé préventifs, comme la vaccination, peut être difficile. Les programmes actuels tendent à amalgamer des questions reliées au statut d'immigrant et d'autres qui concernent les minorités ethniques ou raciales. En outre, ces programmes tendent à ne pas tenir compte du fait que le discours sur l'acculturation et la culture sur la santé peut varier selon les sous-groupes d'immigrants et l'environnement social de la communauté d'accueil. Cet article vise à combler le manque dans la littérature actuelle en proposant un cadre conceptuel qui repose sur une perspective socioécologique pour décrire les facteurs d'acculturation et culturels influant sur les comportements des immigrants à l'égard des soins de santé préventifs. À cette fin, nous faisons la synthèse de la littérature portant sur les perspectives relatives aux facteurs d'acculturation et culturels en matière de soins de santé préventifs. Nous avons utilisé une étude de cas sur le vaccin contre la grippe parmi les immigrants chinois pour illustrer l'importance de cibler et d'adapter les démarches auprès des divers sous-groupes d'immigrants. Nous avons effectué un examen critique de 10 programmes actuels de vaccination contre la grippe adaptés pour les immigrants et les minorités ethniques afin de dégager le niveau de sensibilité culturelle dans leurs composants structurels de surface et profonds. Finalement, nous avons proposé un cadre conceptuel qui intègre les facteurs d'acculturation, les éléments culturels et l'anatomie culturelle des programmes examinés, que nous avons appliqué au contexte des immigrants chinois pour faire la démonstration de la sensibilité culturelle. Sont ensuite discutées les limites de l'étude, puis formulées des recommandations et des suggestions d'études subséquentes découlant de ce cadre, en vue de contribuer à l'adaptation culturelle des programmes de santé préventifs destinés aux immigrants.

Mots-clés : immigrants, adaptation culturelle, soins de santé préventifs, sensibilité interculturelle, vaccination.

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Received April 28, 2016

Revision received August 19, 2016

Accepted August 22, 2016 ■