

Table A – Search syntax.

Databases	Searches	Citations
PubMed	<p>(((flu[Title/Abstract] OR influenza[Title/Abstract])) AND (vaccine[Title/Abstract] OR vaccines[Title/Abstract] OR vaccination[Title/Abstract] OR immunization[Title/Abstract] OR immunisation[Title/Abstract] OR inoculation[Title/Abstract] OR shot[Title/Abstract] OR shots[Title/Abstract])) AND ('old people'[Title/Abstract] OR 'old adults'[Title/Abstract] OR elder[Title/Abstract] OR elderly[Title/Abstract] OR 'older people'[Title/Abstract] OR 'older adults'[Title/Abstract] OR senior[Title/Abstract] OR seniors[Title/Abstract] OR geriatric[Title/Abstract])) AND (knowledge OR attitude OR attitudes OR uptake OR acceptance OR intention OR intentions OR perception OR perceptions)</p>	436, 2016/03/09
Embase	<p>flu:ab,ti OR influenza:ab,ti AND (vaccine:ab,ti OR vaccines:ab,ti OR vaccination:ab,ti OR immunization:ab,ti OR immunisation:ab,ti OR inoculation:ab,ti OR shot:ab,ti OR shots:ab,ti) AND ('old people':ab,ti OR 'old</p>	476, 2016/03/09

CINAHL TI-AB (flu OR influenza) AND TI-AB (vaccine OR vaccines OR vaccination OR immunization OR 110,
immunisation OR inoculation OR shot OR shots) AND TI-AB ('old people' OR 'old adults' OR elder OR elderly 2016/03/09
OR 'older people' OR 'older adults' OR senior OR seniors OR geriatric) AND TX (knowledge OR attitude OR
attitudes OR uptake OR acceptance OR intention OR intentions OR perception OR perceptions)

Table B – Summary of included studies.

Reference	Design and sample	Instruments and data collection	Key findings	Comments
Frank, 1985, Canada	273 elderly patients from one community clinic (RR not clear).	Researcher-developed questionnaire: demographic data, accessibility to influenza clinic, previous influenza/ vaccination history, and attitudes towards influenza and vaccination.	Vaccination rate: 39.9%. Reminder letter led to improved vaccination rate (43%/17%). Higher vaccination rate was associated with prior vaccination ($P<0.001$) and belief in vaccine efficacy ($P<0.0001$). Lower vaccination rate was linked to having reported 'reaction' ($P=0.001$) and heard negative comments ($P=0.028$).	Total population/ census sample based in a single site.
Pearson, 1994, USA	Cross-sectional study. Mail/telephone survey. Four groups with 325 seniors randomly	Researcher-developed questionnaire: previous influenza vaccination, exposure to campaign activities, attitudes and knowledge about influenza	Vaccination rate: 75% (well) and 85% (ill). Provider recruitment letter ($P<0.001$, $P=0.05$) and exposure to vaccination information ($P<0.01$, ill) were associated with vaccination. Vaccine compliance was positively associated with previous	Medium size random sample drawn in a state. High

	sampled from a health service system (RR 74.8%).	vaccine, vaccination intentions, health status, healthcare utilization and demographic information.	vaccination (OR=504.5) and belief of doctor's recommendation (OR=22.7), and negatively associated with fear of adverse reaction (OR=0.275) and belief that vaccine is ineffective (OR=0.056).	response rate.
Honkanen, 1996, Finland	Mail survey. 497 old people living outside institutions randomly sampled from three districts (RR 83.3%).	Researcher-developed questionnaire: vaccination status, awareness of vaccination campaign, chronic illness, previous experience, and beliefs regarding influenza vaccine.	Vaccination rate: 47.9%. Factors linked with higher vaccination rate were perceived need of vaccination (RR 2.7–7.9), beliefs in effectiveness (RR 2.1–6.1), information from health visitors (RR 1.8–2.6), presence of chronic diseases (RR 1.0–1.5) and previous vaccination (RR 1.6–2.2). Beliefs in adverse effects were associated with low vaccination rate (RR 0.2–0.6). Occurrence of adverse effects was not associated with	Medium size random sample drawn from three districts. High response rate.

vaccination (RR 0.7–1.5).

Information received from health visitors was associated with more positive beliefs (RR 1.1–1.3).

Essen, 1997, Netherlands	Mail survey. 81 non-compliant and 127 randomly sampled compliant people from seven family practices (RR 77% vs 91%).	Researcher-developed questionnaire based on HBM: family characteristics, self-perceived health status, perceived threat of influenza, perceived benefits and costs.	Vaccination rates: 84%. Age was the only personal characteristics related to non-compliance of vaccination, people aged <75 years were less compliant (aOR 1.0–2.7 for non-compliance). Predictors for non-compliance were concerns about side effects (aOR 16.2–2883) and self-appraised good health (aOR 4.4–770). Belief of not being susceptible to influenza was the most common reason for being unvaccinated, and mail cue from a GP was the most common reason for being vaccinated.	Small sample based in one geographic area. High response rate.
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Nexøe, 1998, Denmark	Cross-sectional study. Mail survey. 2147 old people randomly sampled from all counties (RR 58%).	Researcher-developed questionnaires: Questionnaire I based on HBM and Multi-dimensional Locus of Control Theory and also included health, drug consumption and vaccination in preceding year; Questionnaire II asked whether vaccinated or not, sent 1 year later.	Vaccination rate: 51% (high risk), 29% (low risk). Predictors of vaccination were perceived benefits (OR 1.31–2.03), perceived severity (OR 1.07–1.15), living with another person (OR 1.03–2.48), advised by GP (OR 1.97–5.96), age (OR 1.00–1.07), vaccinated in previous influenza seasons (OR 11.72–54.01) and living in Copenhagen (OR 3.2–11.90). Predictors of vaccine refusal were perceived barriers to vaccine (OR 0.85–0.94) and living in a nursing home or sheltered housing (OR 0.02–0.44). The model had a positive predictive value of 91% (87–94%) and a negative predictive value of 86% (83–88%).	Large random sample drawn from the whole country. Moderate response rate.
Pregliasco,	Interview/telephone	Researcher-revised questionnaire:	Vaccination rate: 26–48.6%.	Large

1999, Italy	survey. 941 old people randomly sampled from three regions in Italy (RR 59–89%).	personal characteristics, modalities and procedures of offers of influenza vaccination, opinions on this approach, health status, degree of self-sufficiency, and scale of activities of daily living.	Non-vaccination behaviour was related to beliefs that vaccine was not efficacious (OR 1.91–10.29)/would cause adverse reactions (OR 1.27–193.73), and previous vaccination history (97.4% vs 2.6%, 82% vs 18.2%). Lack of information about vaccination efficacy and safety was the main reason for non-vaccination (51.6–67%).	random sample drawn from three regions. Moderate or high response rate.
Abramson, 2000, Israel	Telephone survey. 795 elderly patients randomly sampled from a primary care clinic (RR 78.7%).	Researcher-developed questionnaire: vaccination history, reasons for immunization or non-immunization, influence of a nurse or physician recommendation, knowledge and	Vaccination rate: 68.1%. Reason for immunization: physician's recommendation (50.6%). Reason for non-immunization: not suffering from influenza (17.0%), fear of side effects (15.0%) and non-belief in vaccine efficacy (15.0%).	Large random sample based in a single site. High

		attitude, self-appraised health, chronic disease and demographic information.	Immunization was associated with the identity of primary physician (OR 1.28–3.27) and having visited physician during previous 3 months (OR 1.51–4.78). Immunization was more likely among persons who wrongly believed it provides complete protection (OR 6.45–34.56), and did not believe it can cause influenza (OR 2.02–5.16).	response rate. Non-standard questionnaire development.
Armstrong, 2001, USA	Cross-sectional study. Telephone survey. 659 old people randomly sampled from a primary care site (RR 73.8%).	Researcher-developed questionnaire based on HBM: vaccination behaviour and intention, demographic information, history of side effects from immunization, concern about undisclosed contents of	Vaccination rate: 62.5%. Factors of vaccine receipt: each component of HBM, mistrust in vaccine contents (OR 0.26–0.91), belief that immunization is inconvenient (OR 0.05–0.36), belief that immunization is painful (OR 0.08–0.54), history of prior side effects (OR 0.18–0.60), physician recommendation (OR 1.76–5.93), prior immunization (OR 2.69–7.08) and prior immunization refusal	Large random sample based in a single site. High response rate.

		influenza vaccine, health beliefs and cues from HBM constructs.	(OR 0.30–0.56).	
Santibanez, 2002, USA	Cross-sectional study. Telephone survey. 1234 elderly patients randomly sampled from 65 primary care clinics (RR 82%).	Multi-disciplinary team designed questionnaire based on TRA: facilitating conditions, behavioural habits, value of perceived consequence of the activity, social influence and attitude to the activity.	Vaccination rate: 78.1%. A higher percentage of unvaccinated subjects reported that they did not know the symptoms of influenza compared with the vaccinated subjects ($P<0.001$). Influenza vaccination was associated with the belief that vaccination was the best way to prevent influenza ($P<0.001$), smoking status ($P=0.01$) and colon screening ($P<0.001$). Reason for non-vaccination: low susceptibility (19%), vaccines would cause influenza (14%), and previous adverse reactions (13%).	Large random sample drawn from diverse group of practices. High response rate.
Evans,	Cross-sectional study.	Researcher-developed	Vaccination rate (1998–1999 season): 53.5%.	Large

2003, UK	Mail survey. 2600 old people randomly stratified sample from a health authority (RR 57.5%).	questionnaire: personal characteristics, knowledge of influenza symptoms, severity and risk of catching infection, views on safety and efficacy of influenza vaccine and sources of information, vaccination status, vaccination history, chronic illness, hospitalization history, self-perceived health status.	Predictors of vaccination included age ($P \leq 0.01$), perceived poor health ($P \leq 0.05$), chronic diseases ($P \leq 0.02$), advice from doctor/nurse (OR 1.6–3.4), advice from friends (OR 0.2–0.7) and views on vaccine efficacy ($P < 0.001$). Vaccination intention of those never immunized: perceived likelihood of getting influenza (OR 1.1–4.0), belief that every elderly person should be vaccinated (OR 16.1–363.8), and belief that vaccine side effects were less risky than influenza (OR 2.3–10.8).	random sample based in one geographic area. Moderate response rate.
Madhavan, 2003, USA	Cross-sectional study. Mail survey. 1968 old people	Researcher-developed questionnaire: demographic information, access to	Vaccination rate: 81.5%. Predictors associated with vaccination included: knowing someone with influenza (OR 4.997, $P = 0.010$), believing	Large random sample drawn

	randomly sampled from eight counties (RR 25.3%).	immunization, perceived susceptibility to disease, perceived benefit of immunization, perceived harm from immunization and perceived ease of getting immunization.	vaccine is beneficial (OR 0.397, $P=0.012$), perceived susceptibility (OR 1.447, $P=0.022$), and perceived harm from immunizations (OR 0.655, $P=0.002$). Access was not a predictor, which is not consistent with other surveys.	from eight counties. Low response rate. Assessed non-response bias.
Chi, 2004, USA	Cross-sectional study. Mail survey. 661 elderly patients sampled from a senior centre clinic (RR 57%).	Researcher-revised questionnaire: demographic background, health status, previous experiences, and beliefs about influenza and vaccine.	Vaccination rate: 79%. Variables not associated with vaccination: sociodemographic variables, a history of influenza-like illness ($P=0.49$), and perception of being healthy ($P=0.44$). Predictors of vaccination: perceived severity (weakly associated, $P=0.07$, 0.015), perceived efficacy ($P=0.003$) and	Large total sample of a single site. Moderate response rate.

provider recommendation ($P<0.001$).

History of side effects linked to non-vaccination ($P<0.001$).

Provider recommendation seemed to overcome negative beliefs about influenza vaccines.

Zimmerman, 2004, USA	71 clinicians and 925 elderly patients randomly sampled from various practices (physician RR 85%).	Physician questionnaire based on PRECEDE-PROCEED model: predisposing factors; reinforcing factors; enabling factors and environmental factors. Patient questionnaire based on TRA: facilitating conditions, behavioural habits, social influences, consequence value of	Practices with express vaccination clinics had higher vaccination rates than those without such programmes (87% vs 76%, $P=0.01$). Multi-variate model results indicated that patient factors linked to influenza vaccination status included: vaccination intention ($P<0.001$), belief that those who are not vaccinated will contract influenza ($P=0.049$), and history of being screened for colon cancer ($P=0.023$). Physician factors included awareness of recommendation to	Large random sample drawn from various practices. High response rate.
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		activity, and attitude about activity.	vaccinate asthmatics ($P=0.024$) and agreement with these recommendations ($P=0.004$).	
Bardenheier, 2006, USA	Cross-sectional study. Telephone survey. 11,126 old people sampled from five sites (RR 52.4%).	Researcher-developed questionnaire based on HBM: demographic variables, doctor visits, beliefs and attitudes toward influenza vaccine.	Unvaccinated seniors were classified into four clusters: potentials, fearful uninformed, doubters and misinformed. Clusters varied significantly by site ($P<0.001$), race/ethnicity ($P<0.001$) and sex ($P<0.05$), but not by age ($P>0.05$) or education ($P>0.05$). Previous receipt of influenza vaccination varied significantly by cluster ($P<0.001$). Less than half of unvaccinated seniors had received doctor/nurse recommendation for vaccination.	Large sample from five sites. Moderate response rate. Cluster analysis.
Gallagher, 2006, UK	193 old people recruited by	Researcher-developed questionnaire based on TPB:	Vaccination rate: 46% (continually for 4 years). Multi-variate regression analysis revealed that subjective	Small convenience

	snowballing sampling from three community centres.	demographics, previous 4-year vaccination status and TPB constructs (including anticipated regret).	norms ($P<0.001$), past behaviour ($P<0.001$) and anticipated regret ($P<0.001$) were positively related to vaccination intention. TPB accounted for 72.6% of vaccination intentions.	sample based in one geographic area.
Mangtani, 2006, UK	Cross-sectional study. Mail survey. 1206 elderly patients randomly sampled from two medical projects (RR 75%).	Researcher-developed questionnaire: vaccination history, reasons for having/not having influenza vaccination, future vaccination attention, self-perceived health status and activity.	Vaccination rate: 85% (men), 75% (women). Vaccine recipients were more likely to be male than female (RR 1.03-1.22). Influenza vaccine uptake was not related to self-perceived health ($P=0.16$) or inactivity ($P=0.07$). Reasons for vaccination: positive behavioural beliefs (87.1%), and a recommendation from healthcare workers (82.8%). Reasons for non-uptake are that they did not get ill (44.4%), never had it before (30.2%) and perception that vaccine makes	Large random sample drawn from two sites. Moderate response rate.

them ill (25.4%).

Winston, 2006, USA	Cross-sectional study. Telephone survey. 4577 old people randomly sampled from five states (RR 61.0%).	Researcher-developed questionnaire: demographic variables, doctor visiting, vaccination (pneumococcal and influenza vaccines) status, vaccination awareness, provider recommendation, vaccination intention, side effect experience.	Predictors of vaccination were: provider recommendation (RR 1.31, 1.25-1.38) and doctor's visit (RR 1.34, 1.19-1.52). Those who believed that they had become sick from a prior influenza vaccination were less likely to be vaccinated ($P<0.001$). People who did not plan to get vaccinated next year were more common among those who had not been vaccinated last year ($29.0\pm 2.1\%$) and those never vaccinated ($50.2\pm 2.6\%$).	Large random sample drawn from five states. High response rate.
Lau, 2007, Hong Kong	Cross-sectional study. Telephone survey. 1103 old people randomly sampled	Researcher-developed questionnaire based on HBM: background information, influenza history, vaccination	Vaccination rate: 48.1%. Sex ($P<0.01$), health professionals' recommendation (OR 5.63-15.5), visited community centres ($P<0.01$) and perceived side effects ($P<0.01$) were related to vaccination history.	Large random sample. High

	from telephone directories (RR 84.5%).	history, vaccination intention, perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and worries about contracting SARS.	Age ($P<0.05$), health professionals' recommendation ($P<0.01$), living with family ($P<0.01$), medical decision influenced by family ($P<0.05$) and perceived side effects ($P<0.01$) were related to vaccination in last 6 months. Vaccination intention was predicted by living with family members ($P<0.01$), perceived efficacy ($P<0.01$), perceived severity ($P<0.01$), knowledge ($P<0.05$) and receiving financial allowance ($P<0.05$).	response rate.
Kwong, 2008, Hong Kong	Retrospective study. Face-to-face survey. 197 elderly patients conveniently sampled from five general	Champion's HBM scale: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, activating cues and sociodemographic	Vaccination rate: 64.47%. Patients' vaccine uptake was associated with three items in perceived benefits ($P<0.001$, $P=0.001$, $P=0.004$), perceived barriers (side effects, $P<0.001$; painful, $P=0.001$; scared of needles, $P=0.007$), doctors' recommendation ($P<0.001$) and	Small convenience sample based in one geographic

	outpatient clinics.	characteristics.	families' recommendation ($P=0.019$) (RR=88.3%).	area.
Kwong, 2008, Hong Kong	Descriptive study. Face-to-face survey. 70 elderly patients conveniently sampled from five general outpatient clinics.	Researcher-developed questionnaire: a screening list, a sociodemographic form and Champion's HBM scale.	Old people who have refused vaccination believe that vaccination is useful and perceived few barriers to receiving vaccination. Refusal reasons included good health status, perceived effectiveness of other prevention measures, low perceived susceptibility and low perceived severity.	Small convenience sample based in one geographic area.
Lau, 2008, Hong Kong	Cross-sectional and follow-up longitudinal study. Telephone survey. 886 old people randomly sampled	Researcher-developed questionnaire based on HBM: background information, influenza history, vaccination history, vaccination intention, perceived susceptibility, perceived	Vaccination rate: 31.1%; first-time vaccination: 13%. Cross-sectional factors of vaccination history: age (aOR 1.77–6.48), perceptions of no side effects (aOR 5.11–46.75), perceived duration of effectiveness (aOR 1.07–4.01), perceived barriers (aOR 0.11–0.39) and vaccination intention (aOR 2.74–11.42).	Large random sample drawn from more than one site. High

	from telephone directories and 483 included in the follow-up study (RR about 80%).	severity, perceived benefits, perceived barriers, and worries about contracting SARS.	Cross-sectional predictors of vaccination intention: living with spouse (aOR 1.02–2.27), belief that influenza vaccine had no side effects (aOR 2.42–21.93), worried about contracting SARS (aOR 1.31–3.42) and prior vaccination (aOR 2.08–5.41). Longitudinal factors of first-time vaccination: visiting social centre during follow-up period (OR 1.39–5.39).	response rate. Longitudinal study.
Lau, 2009, Hong Kong	Cross-sectional survey. 1015 old people conveniently sampled from 15 elderly social centres.	Researcher-developed questionnaire based on literature review: demographic characteristics, self-perceived health status, chronic illness history, hospitalization history,	Vaccination coverage: 62.4%. Correlates of vaccination: vaccination intention (aOR 7.877; $P<0.001$), free vaccination (aOR 3.024; $P=0.002$), perceived need to receive vaccination following SARS and avian influenza (aOR 2.413; $P=0.001$), received advice from nursing staff (aOR 7.161; $P< 0.001$), received advice from	Large convenience sample drawn from more than one site. High

	(RR 80.4%).	information source, knowledge and perceptions of influenza and vaccines, vaccination experience.	other medical staff (aOR 3.771; $P<0.001$), and received advice from family members/friends (aOR 3.023; $P=0.001$).	response rate.
Avelino-Silva, 2011, Brazil	Cross-sectional survey. 134 elderly patients conveniently sampled from four outpatient clinics in a hospital (RR not clear).	Researcher-developed questionnaire: demographic and clinical variables, reasons for compliance or non-compliance.	Vaccination rate: 67.1%. Vaccinated elderly patients had a higher rate of receiving medication for chronic illness ($P<0.05$) and having been vaccinated in previous year ($P<0.05$). Physician recommendation (OR 2.7, 1.29–5.6) was associated with vaccination. Compliance reasons: annual nationwide campaign (52.2%), belief in vaccine efficacy (37.7%) and physician recommendation (35.5%). Non-compliance reasons: belief that vaccine could induce	Small convenience sample based in a single site.

influenza (36.4%), other side effects (16%) and rarely contracted influenza (16%).

Matsui et al., 2011, Japan	Cross-sectional study. Mail survey. 858 old people randomly sampled from a rural town (RR 44.4%).	Researcher-developed questionnaire based on HBM: sex, age, influenza history, information source, smoking history and HBM constructs.	Vaccination rate: 51–52%. Vaccination was associated with information from medical facilities (OR 2.42–15.7), town office (OR 2.26–13.8) and family (OR 1.01–10.6); perceived efficacy (OR 8.28–48.0); perceived severity (OR 2.47–18.8); often suffered from upper respiratory tract infection (OR 1.02–4.03); perceived vulnerable to influenza (OR 2.36–28.6); and family members were vaccinated (OR 2.50–5.55). Non-vaccination was associated with information from newspapers/magazines (OR 0.15–0.76), believed in potential adverse effects (OR 0.15–0.78), barriers or inconvenience	Large random sample based in one geographic area. Moderate response rate.
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(OR 0.05–0.31) and current smokers (OR 0.11–0.61).

Yu, 2014, Hong Kong	Descriptive correlational study. 336 old people conveniently sampled from three general outpatient clinics (RR 91.1%).	Chinese version of Håmmig's HBM questionnaire and researcher-developed data collection sheet: demographic data, clinical profile, perceived health, vaccination status, post-vaccination discomfort.	Vaccination rate: 58.5%. Multi-morbidity (OR 2.27, $P=0.03$), perceived susceptibility (OR 1.14–1.78) and post-vaccination discomfort (OR 0.006–0.63) were predictors of vaccination intention.	Moderate convenience sample based in one geographic area. High response rate.
Boggavarapu, u, 2014, USA	Cross-sectional study. Face-to-face survey. 221 old people randomly sampled	Researcher-developed questionnaire based on theoretical models: sociodemographic factors, attitudes toward	Vaccination rate: 45.7%. Vaccination uptake was associated with trust in health providers' recommendation without discrimination experience (aOR 3.68–59.83) and belief in vaccine-induced influenza	Small random sample. High

	from six churches (RR 94.1%).	vaccination, perceived discrimination and safety, perceived quality of relationship with primary healthcare provider, access to transportation, spirituality, immunization history and health information sources.	(aOR 0.05–0.23).	response rate.
Bödeker, 2015, Germany	Cross-sectional study. Telephone survey. 807 old people underlying chronic diseases randomly sampled from the	Researcher-developed questionnaire based on previous studies: sociodemographic factors, behaviour and attitude about seasonal influenza vaccination and influenza diseases.	Vaccination rate: 50.0% (2012/13); 49.4% (2013/14). Vaccination uptake was independently associated with age, underlying chronic diseases (OR 1.39–3.09), perceived severity of influenza (aOR 1.31–1.52), perceived vaccination effectiveness (aOR 1.24–1.62), perceived likelihood of vaccination side effects (aOR 0.61–0.80) and recent advice	Large random sample drawn from the whole nation. Low response

	whole nation (RR 16.2%).		through physician consultation (aOR 1.44–4.84). The most commonly stated reasons for not being immunized were mistrust of the vaccination (22%) and the perception that influenza is not dangerous (21%).	rate.
Mo, 2015, Hong Kong	Cross-sectional study. Telephone survey. 1101 old people randomly sampled from telephone directories (RR 81%).	Researcher-developed questionnaire based on HBM: background information, knowledge, vaccination history, vaccination intention, perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, facilitating conditions.	Vaccination rate: 48.5%. Female sex (aOR 1.27–2.94), having chronic disease (aOR 1.49–3.41), knowledge of the fact that influenza vaccine is required every year (aOR 2.66.49–8.88), price of influenza vaccine lower than HK\$150 (aOR 1.97–4.65), recommendations from healthcare providers (aOR 2.81–7.01), lower perceived side effects (aOR 0.07–0.19) and participating in community activities (aOR 1.11–3.79) were significantly associated with previous influenza vaccination.	Large random sample. High response rate.

Klett-Tam men, 2016, Germany	Cross-sectional study. Telephone survey. 1223 old people randomly sampled from telephone directories.	Researcher-developed questionnaire based on KAP: sociodemographic factors; knowledge-, attitude- and practice-related factors.	Vaccination rate: 47.9% (annually), 51.4% (in past 5 years), 66.8% (ever). Vaccination uptake was associated with attitude variable, i.e. perceived importance of vaccine (aOR 14.9–35.5); knowledge score (aOR 1.0–1.6); having received other vaccines.	Large random sample drawn from the whole nation.
Cornford, 1999, UK	Qualitative study. Semi-structured interview. 50 elderly patients randomly sampled from three practices (RR 86%, 69%).	Researcher-revised semi-structure interview guide: self-perceived health status, meaning of health, ways to keep healthy, and beliefs about influenza vaccination.	Although they acknowledged their medical diseases, the patients regarded themselves as healthy in the sense of being independent and active. They recognized influenza could be fatal for particular groups of people but not for themselves. Both vaccinated and unvaccinated groups had experienced side effects, but their interpretations were different.	Random sample in three practices.

			Vaccination decision based more on consideration whether vaccines would reduce or cause influenza-like illness.	
Telford, 2003, UK	Qualitative study. Semi-structured interview. 10 vaccinated and 10 unvaccinated old people purposively selected from a general practice.	Researcher-developed interview guide: background variables, general health, knowledge about influenza and vaccine, and vaccination uptake.	Participants were concerned about maintaining their health, and had a good understanding of influenza and vaccines. Vaccination decision was influenced by trust or mistrust of modern medicine, prior experience of vaccination and perceived risk from influenza. Newly acquired lay experience and personal perceived risk from influenza seemed to be more important catalysts for change in vaccination uptake than professional recommendation or advertising.	Purposive sample drawn from a city practice.
Evans, 2007, UK	Qualitative study. Narrative interview.	Researcher-developed interview guide: risk of catching influenza,	Many old people did not feel vulnerable to influenza, regardless of their age.	Purposeful sample from

	<p>54 old people in four categories purposefully sampled from communities in three cities.</p>	<p>severity of influenza, efficacy and safety of influenza vaccine, self-assessment of health status, and process of getting immunized, including role of prompts from family, friends and health workers.</p>	<p>Both refusers and defaulters overstated adverse effects from influenza vaccine, and more likely to describe previous negative experiences and express skepticism about its efficacy.</p> <p>Several expressed a need for more information about influenza and vaccine.</p> <p>Individual prompts, particularly from GPs, seemed to be the most significant motivator to vaccination.</p>	<p>urban, semi-urban and rural communities.</p>
<p>Cameron, 2009, USA</p>	<p>Qualitative study. Focus group study. 48 African American seniors in six focus groups recruited from</p>	<p>Researcher-designed semi-structure protocol based on EPPM: knowledge and attitudes about influenza and vaccine, past experiences, reasons for choosing</p>	<p>Perceived susceptibility influenced by self-perceived health status, different beliefs about age, and perceptions of the prevalence and contagion of influenza.</p> <p>Past experiences tended to influence perceived severity.</p> <p>Participants were more likely to be vaccinated when</p>	<p>Samples drawn from a city.</p>

	an urban city.	to receive or forgo the vaccine, and barriers and facilitators to vaccination.	vaccination was made available or offered at little or no cost. Response efficacy was related to perception of vaccine efficacy, concerns about side effects, recommendation of health providers, and prior experiences.	
Payaprom, 2009, Thailand	Qualitative study. In-depth interview. 11 old people and nine adult patients with chronic illness randomly selected from a health centre.	Researcher-designed semi-structure schedule: participants' understandings of influenza and vaccination, factors influencing decision-making about vaccination.	Most participants had insufficient knowledge about influenza and vaccination. Vaccination decisions were based on several factors, including salience of risk, self-perceived health status, influence of others, perception of the need for preventive health care and financial barriers.	Random sample from a single site.
Kwong, 2010, nine	Qualitative study. Focus group study.	Researcher-developed pre-focus group questionnaire:	Participants' vaccine preferences were determined by their behavioural beliefs in vaccination, which were based on their	Purposive sample

countries	208 old people in 26 focused groups purposively selected from nine countries.	sociodemographic data, vaccination awareness, and vaccination status. Researcher-designed semi-structure interview guide based on HBM.	probability calculation of susceptibility to and severity of influenza and vaccine effectiveness, and their utility calculation of vaccine, healthcare and social costs. Action cues prompting vaccination and vaccine access further affected the vaccine uptake of participants with vaccine preferences. Vaccination coverage was likely to be higher in the countries where normative beliefs in favour of vaccination had formed.	selected from nine countries.
Dixon-Woods, 2004, UK	Follow-up trial survey. 1865 old people sampled from a large general practices (RR not clear).	Researcher-designed semi-structure interview guide: views and experiences of influenza and vaccination, views on different vaccination strategies	A one-off home visit did not result in sustained changes in vaccination behaviour (66.4% vs 66.3%). Older people can be classified into four groups basing on content analysis: 'faithful', 'converts', 'easy-going' and 'sceptics' groups.	Quota sampling drawn from a former trial.

Qualitative study followed 25 participants using quota sampling	and perception of vulnerability to influenza.	Sceptics perceived vaccines to be ineffective or to be irrelevant to them as they were invulnerable to influenza. Non-sceptics tended to believe in vaccination efficacy, and were more likely to emphasize their susceptibility.
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RR, response rate; HBM, Health Belief Model; TRA, Theory of Reasoned Action; TPB, Theory of Planned Behaviour; EPPM, extended parallel process model; OR, odds ratio; aOR, adjusted odds ratio; GP, general practitioner; SARS, severe acute respiratory syndrome.

Table C – Quality assessment of included quantitative studies.

Reference	Sample size	Whether random	Sample sites	Response rate	Instrument	Statistics	Rating
Frank, 1985, Canada	Small	-	Low	Not clear	Low	Moderate	Low
Pearson, 1994, USA	Medium	Yes	High	High	Moderate	Moderate	Moderate
Honkanen, 1996, Finland	Medium	Yes	Moderate	High	Low	Low	Moderate
Essen, 1997, Netherlands	Small	Yes	Moderate	High	Moderate	High	Moderate
Nexøe, 1998, Denmark	Large	Yes	High	Moderate	High	High	High
Pregliasco, 1999, Italy	Large	Yes	High	Moderate~high	Moderate	Moderate	Moderate
Abramson, 2000, Israel	Large	Yes	Low	High	Moderate	High	Moderate
Armstrong, 2001, USA	Large	Yes	Low	High	Moderate	Moderate	Moderate
Santibanez, 2002, USA	Large	Yes	High	High	High	Moderate	High
Evans, 2003, UK	Large	Yes	Moderate	Moderate	High	High	Moderate
Madhavan, 2003, USA	Large	Yes	High	Low	High	High	High

Chi, 2004, USA	Large	-	Low	Moderate	Moderate	Low	Moderate
Zimmerman, 2004, USA	Large	Yes	High	High	High	Moderate	High
Bardenheier, 2006, USA	Large	No	High	Moderate	Moderate	High	Moderate
Gallagher, 2006, UK	Small	No	Moderate	Not clear	High	High	Moderate
Mangtani, 2006, UK	Large	Yes	High	High	Moderate	Low	Moderate
Winston, 2006, USA	Large	Yes	High	High	Moderate	Low	Moderate
Lau, 2007, Hong Kong	Large	Yes	High	High	High	High	High
Kwong, 2008, Hong Kong	Small	No	Moderate	Not clear	High	High	Moderate
Kwong, 2008, Hong Kong	Small	No	Moderate	Not clear	Low	High	Low
Lau, 2008, Hong Kong	Large	Yes	High	High	Moderate	High	High
Lau, 2009, Hong Kong	Large	No	High	High	Moderate	High	Moderate
Avelino-Silva, 2011, Brazil	Small	No	Low	Not clear	Low	High	Low

Matsui et, 2011, Japan	Large	Yes	Moderate	Moderate	Moderate	High	Moderate
Yu, 2014, Hong Kong	Medium	No	Moderate	High	High	High	Moderate
Boggavarapu, 2014, USA	Small	Yes	Moderate	High	Moderate	High	Moderate
Bödeker, 2015, Germany	Large	Yes	High	Low	Moderate	High	Moderate
Mo, 2015, Hong Kong	Large	Yes	High	High	High	High	High
Klett-Tammen, 2016, Germany	Large	Yes	High	Not clear	High	High	High

Table D – Quality assessment of included qualitative studies.

Reference	Method to recruit participants	Method to collect data	Whether state data saturation	Whether consider researchers' impact	Method to analyse data	Result presenting	Rating
Cornford, 1999, UK	Low	High	No	No	Moderate	Moderate	Moderate
Telford, 2003, UK	High	Moderate	Yes	No	High	High	Moderate

Evans, 2007, UK	High	High	Yes	No	High	High	High
Cameron, 2009, USA	High	High	Yes	No	High	High	High
Payaprom, 2009, Thailand	Low	Moderate	No	No	Moderate	High	Moderate
Kwong, 2010, nine countries	Moderate	High	No	No	High	High	Moderate