Symptom-specific health-seeking behaviour for common infectious diseases and implications in disease control and surveillance: abridged secondary publication

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KEY MESSAGES

1. Health-seeking behaviour varies considerably across patients with different symptoms.
2. Characterising and understanding factors associated with symptom-specific health-seeking behaviour facilitate planning of healthcare resources and development.
3. Worry of disease transmission is the most important factor associated with reduction in contacts. It is associated with sick leave taking for symptoms such as fever, dizziness, cough, myalgia, and headache only.

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Introduction

From the patient's perspective, health-seeking behaviour tends to be responsive to discomfort or symptoms rather than diagnosis or type of diseases, which is unknown before medical consultation. Therefore, symptom-specific behaviour may more realistically reflect responses to risk communication during epidemics of emerging diseases and to facilitate planning of health care resources.

We carried out longitudinal telephone surveys to gather information on public health-seeking behaviour associated with common symptoms. How health-seeking behaviour relates to interpretation of the surveillance data and disease control was explored. Health-seeking behaviour was linked to symptoms explicitly to provide additional symptom-specific information. This will fill the gap of how the general population response to different symptoms under different level of anxiety. Employment-based medical benefits are associated with higher access or intensity of medical consultation.[1] Surveillance data can be better utilised if associations of consultation are identified. We also derived subgroup incidence based on surveillance data with the knowledge of symptom-specific health-seeking behaviour.

Methods

Longitudinal telephone surveys with respondents aged ≥16 years recruited from randomly selected households were conducted from February 2014 to May 2015. One adult was invited for an interview in each selected household. Information about children (aged <16 years) was taken from caregivers. Three subsequent calls were carried out to capture changes in health-seeking behaviour at periods with different patterns of disease burden or anxiety level. To avoid potential selection bias owing to illness during a particular season, respondents received all subsequent calls, even if they reported no illness episode in the first interview.

Weekly sentinel surveillance data for influenza and acute diarrhoeal diseases provided by general practitioners (GP), general outpatient clinics (GOPC), and traditional Chinese medicine practitioners (TCMP) were retrieved from the website of Centre for Health Protection.[2]

Descriptive analyses were carried out for the healthcare-seeking pattern, preventive measures, and change in contact pattern by each symptom. Multivariable analyses were carried out to identify factors associated with healthcare seeking, contact pattern, or other preventive measures, adjusted for confounders such as age, sex, chronic conditions, medication, medical benefits, and household income. Relative importance of specific symptoms was estimated. Because subjects were followed up for several rounds of interview, general estimating equations were used to account for correlation within subjects. An exchangeable correlation structure was used by assuming constant correlations between interview rounds.

Results

In all four rounds of the survey, there were 4370

illness episodes, accounting for 50.1% of all person-round interviewed. Among 4370 individuals with any symptoms, 44.6% sought for healthcare service and 55.4% did not. Of those who sought healthcare service, 31.5% consulted a GP, whereas only 6.6% and 7.4% went to GOPC and TCMP, respectively (Table 1). Multivariable analysis showed that younger age-group (0-15 years), women, chronic conditions

TABLE 1. Symptom-specific health-seeking behaviour for the top 10 symptoms

Symptom	No. of episodes	% (95% confidence interval)					
		30-day incidence	General practitioner	General outpatient clinic	Traditional Chinese medicine practitioner	Accident & emergency department	No heath-seeking behaviour
Fatigue	1189	10.4 (6.8-14.0)	11.7 (8.1-15.3)	0.8 (0.0-4.4)	9.7 (6.1-13.3)	0.0 (0.0-3.6)	81.1 (77.5-84.7)
Headache	980	7.0 (4.4-9.6)	56.0 (53.4-58.6)	1.3 (0.0-3.9)	7.5 (4.9-10.1)	0.7 (0.0-3.3)	33.4 (30.8-36)
Runny nose	957	8.4 (7.4-9.4)	26.2 (25.2-27.2)	3.5 (2.5-4.5)	5.3 (4.3-6.3)	0.5 (0.0-1.5)	31.4 (30.4-32.4)
Low back pain	722	7.1 (3.6-10.6)	4.6 (1.1-8.1)	9.7 (6.2-13.2)	13.5 (10.0-17.0)	0.9 (0.0-4.4)	63.2 (59.7-66.7)
Cough	707	10.5 (6.9-14.1)	52.8 (49.2-56.4)	6.4 (2.8-10.0)	4.0 (0.4-7.6)	1.0 (0.0-4.6)	38.9 (35.3-42.5)
Myalgia (aches or pain in muscles)	597	4.6 (2.0-7.2)	4.1 (1.5-6.7)	0.7 (0.0-3.3)	3.2 (0.6-5.8)	0.0 (0.0-2.6)	84.1 (81.5-86.7)
Sore throat	584	5.5 (2.9-8.1)	60.5 (57.9-63.1)	4.1 (1.5-6.7)	9.6 (7.0-12.2)	0.0 (0.0-2.6)	30.5 (27.9-33.1)
Dizziness	466	5.0 (1.9-8.1)	34.4 (31.3-37.5)	1.1 (0.0-4.2)	3.0 (0.0-6.1)	0.0 (0.0-3.1)	57.3 (54.2-60.4)
Fever	282	4.3 (2.4-6.2)	86.5 (84.6-88.4)	3.4 (1.5-5.3)	8.1 (6.2-10.0)	2.4 (0.5-4.3)	8.8 (6.9-10.7)
Loss of appetite	253	4.7 (2.1-7.3)	18.5 (15.9-21.1)	1.2 (0.0-3.8)	11.7 (9.1-14.3)	0.3 (0.0-2.9)	70.0 (67.4-72.6)
Any symptom	4370	42.0 (36.1-47.8)	31.5 (22.9-40.1)	6.6 (0.9-12.3)	7.4 (3.0-11.8)	0.8 (0.2-1.4)	55.4 (46.4-64.4)

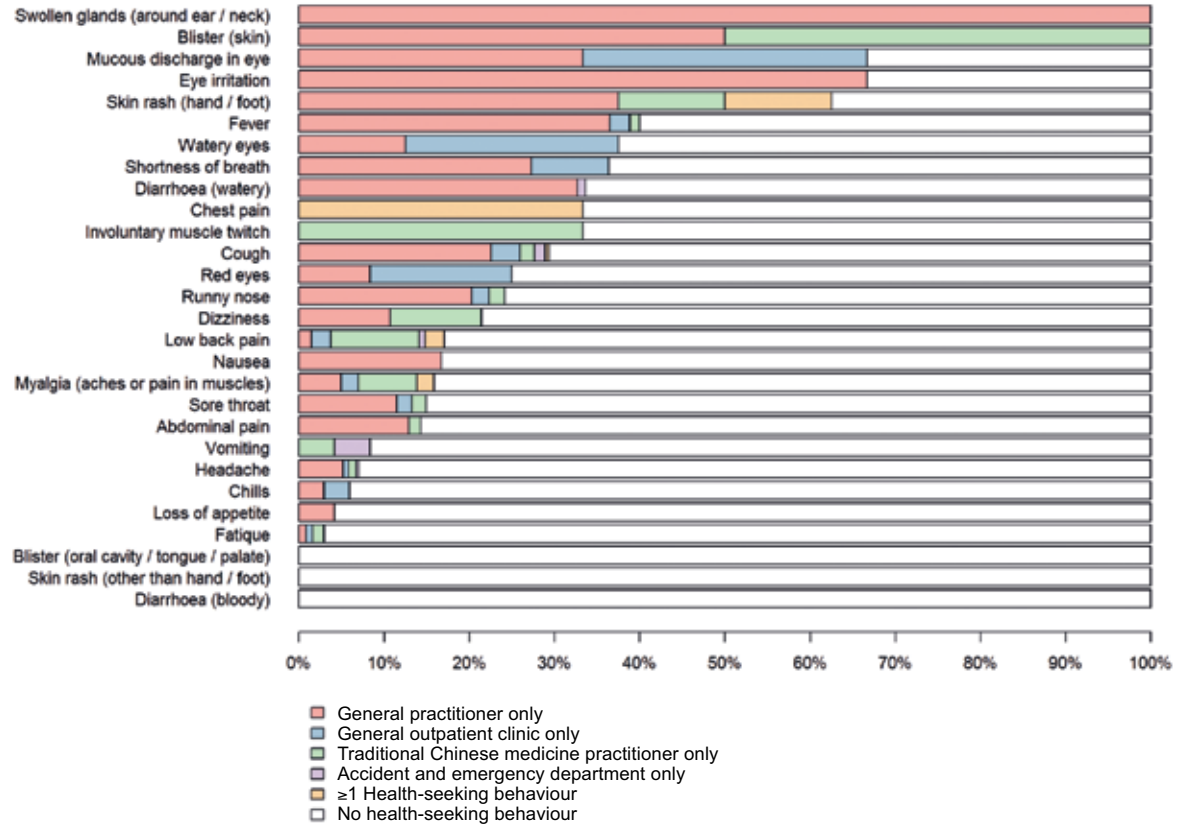

FIG. Health-seeking behaviours specific to single symptoms.

TABLE 2. Factors associated with general practitioner consultation by general estimating equation model

Factors	Odds ratio (95% confidence interval)	P value
Sex		
Female	1	
Male	0.68 (0.60-0.80)	<0.01
Age-group, y		
0-15	2.11 (1.40-3.20)	<0.01
16-54	1	
≥55	1.06 (0.80-1.50)	0.73
Household income, HK$		
<20 000	0.83 (0.50-1.40)	0.49
20 000-29 999	1	
≥30 000	1.21 (0.90-1.60)	0.14
Refuse to answer	1.12 (0.90-1.40)	0.37
Chronic disease		
No	1	
Yes	2.64 (1.10-6.10)	0.02
Medication status		
No	1	
Yes	1.55 (0.70-3.20)	0.24
Having symptoms		
Fever	10.00 (7.30-13.70)	<0.01
Chills	0.99 (0.70-1.40)	0.96
Headache	1.18 (0.90-1.50)	0.2
Cough	2.95 (2.30-3.70)	<0.01
Shortness of breath	1.16 (0.60-2.20)	0.65
Dizziness	1.23 (0.90-1.70)	0.24
Runny nose	2.81 (2.30-3.50)	<0.01
Sore throat	2.00 (1.60-2.60)	<0.01
Diarrhoea (watery)	7.03 (4.90-10.20)	<0.01
Nausea	1.25 (0.70-2.20)	0.45
Vomiting	3.66 (2.20-6.00)	<0.01
Loss of appetite	1.01 (0.70-1.60)	0.96
Abdominal pain	1.55 (1.00-2.40)	0.05
Myalgia (aches or pain in muscles)	0.78 (0.50-1.30)	0.36
Low back pain	0.56 (0.40-0.90)	0.02
Fatigue	0.46 (0.30-0.70)	<0.01
Other	3.29 (2.00-5.40)	<0.01
Round		
1	1.00 (0.80-1.30)	0.99
2	1	
3	2.35 (1.80-3.10)	<0.01
4	2.12 (1.50-3.10)	<0.01
Medical insurance		
None	1	
Employer-provided medical benefits	1.03 (0.70-1.50)	0.88
Private medical insurance	0.89 (0.60-1.30)	0.53
Both	1.13 (0.80-1.60)	0.48

were significantly associated with GP consultation (Table 2). Fever, diarrhoea, and vomiting were associated with higher GP consultation, whereas low back pain and fatigue were associated with lower GP consultations.

Patients with chronic symptoms such as low back pain, myalgia, and fatigue were less likely to perform preventive measures, compared with those with influenza-related symptoms such as fever, cough, and sore throat. Patients with influenza-like illness were more likely to have preventive measures compared with patients with acute respiratory infections and acute diarrhoeal disease. For those who reported change in contacts with colleagues or classmates, >70% of those with fever, chills, nausea, and diarrhoea took sick leave. 87.1% and 78.6% of those with influenza-like illness and acute diarrhoeal disease, respectively, took sick leave. <20% of subjects with fatigue, headache or abdominal pain alone would seek for healthcare service (Fig). Allopathic medicine remained the main form of healthcare service sought (82.6%).

Multivariable analysis showed that worry of disease transmission was the most significant factor in changing contact with their colleagues for all symptoms (all odds ratios [OR] >4), including low back pain which was less likely to be infectious. Male patients with fatigue (OR=0.39, P<0.001), cough (OR=0.58, P<0.01) or sore throat (OR=0.46, P<0.001) were less likely to change contacts with colleagues. Worry of serious complication was associated with change in contacts with colleagues for low back pain (OR=3.56, P<0.01), myalgia (OR=3.20, P<0.05), dizziness (OR=9.22, P<0.001), and loss of appetite (OR=26.8, P<0.001).

Worried of transmission was associated with taking sick leave for fever (OR=43.1, P<0.001), dizziness (OR=42.5, P<0.01), cough (OR=10.3, P<0.001), myalgia (OR=9.1, P<0.05), and headache (OR=5.9, P<0.001). Consistent with the change in contact with colleagues, men (OR=0.15, P<0.05) were less likely to take sick leave owing to fatigue, whereas older adults were less likely to take sick leave owing to fever (OR=0.05, P<0.01) or sore throat (OR=0.38, P<0.05).

Conclusions

Men with illness were less likely to seek healthcare service from GP, but there was no significant sex difference for GOPC and TCMP, consistent with previous studies.[3] Older patients were more likely to visit TCMP, consistent with previous studies.[4,5] Young patients were more likely to visit GP, probably because of parents' worry and asking for more immediate healthcare although the situation may not be urgent.[6]

Worry of disease transmission was the most important factors associated with reduction in

contacts with colleagues for all symptoms. However, it was associated with taking sick leave only for symptoms of fever, dizziness, cough, myalgia, and headache. Simulation analysis has estimated that 72% of influenza cases in the workplace are due to presenteeism.[7] The study assumed a presenteeism rate of 48%, which is higher than that reported in Hong Kong, suggesting a potentially higher impact of workplace transmission of influenza. This may have implications in the healthcare setting.[8] Data generated from this study are useful for healthcare utilisation, control of infectious diseases, and interpretation and design of surveillance systems.

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Disclosure

The results of this research have been previously published in:

1. Zhang Q, Feng S, Wong IOL, Ip DKM, Cowling BJ, Lau EHY. A population-based study on healthcare-seeking behaviour of persons with symptoms of respiratory and gastrointestinal-related infections in Hong Kong. BMC Public Health 2020;20:402.

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