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Sickness certification in Singapore's public primary healthcare system: A cross-sectional analysis

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Abstract

Objectives: Sickness absenteeism has been rising in Singapore with sickness certification commonly performed by primary care physicians. The Primary Care Survey 2014 reported increased primary care demand driven by a rapidly ageing population and the prevalence of chronic disease. This article aims to determine the magnitude of outpatient sickness certification in all the polyclinics in Singapore and identify the demographic characteristics and factors influencing the taking of sick leave by the local multi-ethnic Asian patients.

Design: A one-week, cross-sectional survey using computer-assisted interviews with age-stratified, systematically sampled patients was conducted at all 18 polyclinics in 2014. Sick leave data was then extracted from each polyclinic's administrative system. Data was analysed with logistic regression to determine statistically significant factors.

Results: The sickness certification rate was 22.6% during the study period with a weighted average duration of 1.42 days. Sickness certification was most associated with the younger age group (17–20 years; adjusted odd ratio (AOR) = 9.51), an acute condition (AOR = 24.8) and those living in 1–2 room public housing (AOR = 4.72). Among employees, those working in manufacturing industries had the most association with sickness certification while the finance and insurance industry had the least. An acute upper respiratory tract infection was the most frequent diagnosis for those who obtained medical certificates (38.7%).

Conclusion: A medical certificate was issued in almost one-quarter of consultations in Singapore polyclinics. Sickness certification was predominated by short-term absence for acute conditions. Characterisation of sickness absenteeism among employees serves as a benchmark for future studies. Mitigation measures were discussed while exclusion of private primary care clinics probably led to an underestimation of the magnitude of sickness certification.

Keywords

Sickness certification, sick leave, primary care, absenteeism, medical certificate

Introduction

Sickness absence and certification is often contextualised with regard to the local sick leave policies and healthcare system in each respective country. While this has been extensively studied in European/Scandinavian countries, it has not received much attention in Singapore with the last publications being in 1997.[1–2] To our knowledge, there has not been any published study on sickness certification patterns in Singapore's public primary healthcare sector.

Absenteeism trends have risen in several countries in the Organisation for Economic Cooperation and Development (OECD) over the years, prompting reform in some, as in Sweden in 2006[3] and the United Kingdom in 2010.[4–5] Sick leave regulations and benefits are some of the key drivers behind the rising trends in these countries.[6] The absenteeism burden is much less in Singapore with distinct differences in

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sick leave policy and benefits. Nevertheless, there has been a rising trend here too. A report from the Ministry of Manpower, Singapore, in 2016 revealed that 60% of local employees took outpatient sick leave with an average number of 4.8 days per absentee annually and this had increased from 55.8% in 2007. The proportion of employees who took hospitalisation leave rose from 4.1% in 2007 to 6.0% in 2015. The total number of sick leave days taken per absentee remained at about 19 days in 2015.[7]

The Singapore context

Singapore has its own unique policy on sick leave. Under the local Employment Act, each employee is entitled to 14 days outpatient sick leave and 60 days hospitalisation leave with 100% wage compensation after a minimum period of employment.[8] All this is covered by the employer. A medical certificate (MC) from a company doctor, company-approved doctor or any doctor from a public healthcare institution is required to excuse the individual from work on any occasion except for court attendances. A MC is required from day one of sickness and there is no policy on self-declared sick leave. However, employers have the flexibility to recognise MCs from other sources or stipulate their own human resources (HR) policies on self-declaration and/or self-certification.

Most outpatient bills are out of pocket or on a co-pay basis depending on the benefits and medical insurance arrangements of individual companies. Companies also contribute to each employee's national medical savings account, which is used to purchase a nationally administered basic health insurance plan. This helps individuals pay for large hospital bills and selected costly outpatient treatments.

Sickness certification is commonly performed by primary care physicians (PCPs). In Singapore, private general practitioners, who constitute 82% of the total PCPs in Singapore, manage 79% of primary care attendances nationally. The remaining PCPs (18%) work in public primary care clinics or 'polyclinics', and deal with the remaining 21%.[9] The Primary Care Survey 2014 reported an increased demand overall for primary care driven by a rapidly ageing population with an increasing prevalence of chronic disease. The proportion of chronic visits has increased in both polyclinics and the private GP sector to 52% and 20%, respectively[9] with a corresponding slight decline in acute visits. In Singapore, 62.1% of all patients with chronic diseases follow up at the polyclinics due to the heavily subsidised consultation fees and medications.[10] The 18 polyclinics, then operated by two primary care institutions, SingHealth Polyclinics (SHP) and National Healthcare Group Polyclinics (NHGP), managed 5.26 million patient attendances in 2016.[11]

An acute upper respiratory tract infection (URTI) was the main affective condition in 2014, accounting for 24% of all principal diagnoses nationally. It alone accounted for 10% of polyclinic attendances, for which MCs are often required to excuse the affected patients from school or work.[9] There are other acute conditions that also require sickness certification and these add to the workload of the PCPs working in the polyclinics.

A parallel survey was commissioned by the Ministry of Health Singapore in the same year to understand the health-seeking behaviour and sickness certification patterns of polyclinic attendees as a first step towards a better understanding of the demands of sickness certification on the resources of the public primary healthcare system. This article aims to determine the magnitude of outpatient sickness certification in all the polyclinics in Singapore and to identify the demographic characteristics and factors that influence taking sick leave by the local multi-ethnic Asian patients.

Method

Study sites and duration

A research survey agency was commissioned to conduct a cross-sectional survey at all the 18 polyclinics operated by SHP and NHGP over two months from August to September 2014. Data was collected from each polyclinic over one working week to ensure equitable representation.

Study population

The target subjects were patients who sought medical services at the polyclinics. The following were excluded: vulnerable patients (e.g. minors or those who were cognitively impaired) who were without an accompanying parent, guardian or legal representative; those in distress or who required emergency services; those with suspected infectious diseases who required isolation; and patients who were attending as a result of a criminal act.

Study methodology and sample size

Patients were selected using systematic and stratified sampling by age group as follows: 0–16 (children up to secondary school leaving age); 17–20 (young adults in post-secondary education or young males undertaking military service); 21–50 (adults); 51–64 (older adults); and 65 and above (elderly individuals). The survey was administered face to face by trained interviewers using the Computer Assisted Personal Interviewing software. For each polyclinic, a recruitment team was stationed at the self-service pre-registration kiosks to screen patients by asking their age group. Patients visiting the polyclinics for medical consultations were then sampled systematically and tagged by coloured stickers. The interviewers identified these tagged patients in the waiting areas and administered the questionnaire survey after obtaining their written consent. The questionnaires and consent forms were available in English, Chinese and Malay.

As one of the specific aims of the study was to understand the health-seeking behaviour of patients from different age groups, a minimum sample size of 1000 patients in each age group was required for analysis. This sample size would give a 3% margin of error at a 95% level of confidence for the estimates. To achieve this, it was estimated that 5040 patients were required from the 18 polyclinics (i.e. each polyclinic has to conduct about 10 interviews daily from Monday to Friday and six interviews on Saturday morning for each age group). The target recruitment was calculated after factoring in an expected response rate of 85%.

Survey instrument and data collection

The questionnaires collected data on the recruited subjects' demographic characteristics, employment and reasons for consultation. Electronic health records have been introduced in all polyclinics and these cover the documentation of sickness certification and the length of any sick leave. These data were retrieved from the electronic patient information system for the subjects who had given their consent specifically for this data linkage.

Definition of terms

The classification of occupation and industry in the questionnaire was based on the national standards for classifying occupations and industries in 2010, namely the Singapore Standard Occupational Classification and Singapore Standard Industrial Classification, respectively.[12–13]

'Acute' refers to conditions with a short onset, such as URTIs, diarrhoeal diseases and sprains. 'Chronic' refers to conditions that require long-term follow-up and, in general, regular medication and management of risk factors. Examples are hypertension, asthma and chronic obstructive lung disease, diabetes and cancers. 'Non-morbid' visits refer to immunisations, pre-employment medical checks, preventive care for females, developmental assessments for children and family planning visits.[9]

Data analysis

All analyses were performed using SPSS version 23.0 and Stata version 13.0. Post-stratification weighting according to age group, ethnicity and gender was applied using actual attendances during the study period so that the findings can be meaningfully extrapolated to the population. The Pearson chi-square test was used to test the association of sickness certificates issued with the categorical demographic variables. Logistic regression was used to determine the crude odds ratio (COR) and the adjusted odds ratio (AOR) of the factors influencing the issue of a MC during the polyclinic visit. The factors included in the multivariate model were gender, ethnic group, age, education, residential status, work status and housing type. Occupation, industry and type of diagnosis were also included in the analyses of employee subgroup. A p-value of less than 0.05 was considered statistically significant.

Response rate

The response rate of patients selected for the study was 91% (5316 out of 5868). Data from 165 subjects were removed from the analysis after an audit of consent documents and data completeness. Among the 4245 subjects who consented to linkage with their electronic health records, a further 430 were removed because the information they provided for data linkage was incomplete. The complete data relating to 3815 subjects were eventually analysed for this study.

STROBE checklist

STROBE guidelines for cross-sectional studies were adhered to in the design and preparation of the manuscript.

Results

A total of 1105 subjects (weighted 22.6%) received sickness certification during the study period. The average length of sick leave was 1.42 days; 63.6% of these were a single day excuse from work or study and 32.5% were for the duration of two days.

Baseline characteristics of overall subjects with sickness certification

Table 1 presents the demographic profiles of the study population, including those with sickness certification. It comprised 51.4% females, 70.6% of Chinese ethnicity with the majority aged between 50–64. Singapore citizens constituted 92.7% of the subjects. Almost half of the subjects had up to lower secondary education (47.8%) while 44.4% were employed, 37.5% unemployed and 6.4% were students. Of the subjects, 26.1% lived in small public housing properties (up to three rooms), while 9.6% lived in private housing such as condominiums and property with land. The proportion of patients requiring a consultation for an acute condition (41.5%) was slightly less than those seeking medical attention for a chronic disease (51.3%), such as hypertension and type 2 diabetes mellitus. The rest (7.2%) attended for non-morbid purposes, including health screening at the polyclinics.

Looking at Table 1, more men (27.0%) were issued with MCs compared to women (18.4%). More subjects from age group 17–20 (COR = 59.35, 95%; CI = 51.53 to 68.36) were issued with MCs compared to older age groups. Among the ethnic groups, a higher proportion of Malays (39.4%) were given MCs compared to the Chinese (17.5%), Indians (23.3%) and other minority ethnic groups (38.5%). More subjects with post-secondary (high school equivalent) and diploma-level education (34.7%) were issued with MCs compared to those with other levels of education. A higher proportion of subjects who lived in rental or small public housing properties required a MC compared to those living in larger flats or private houses.

The demographic factors most associated with sickness certification in Table 1 were: age group 17–20 (AOR = 9.51, 95%; CI = 7.75 to 11.68); lower secondary education and below (AOR = 1.48, 95%; CI = 1.38 to 1.59); men undertaking national service (AOR = 2.55, 95%; CI = 2.26 to 2.88) and those living in public housing, such as a 1–2 room Housing and Development Board (HDB) flat (AOR = 4.72, 95%; CI = 4.11 to 5.43).

The diagnosis of acute conditions had the greatest association with sickness certification (AOR = 24.8, 95%; CI = 20.7 to 29.71).

Sickness certification among employees

Among the employees, 33.1% were granted sickness certification (Table 1). In the sub-analysis of employees alone (Table 2), professionals, technicians and clerical support workers were more likely to obtain sickness certification (AOR = 1.34, 95%; CI = 1.12 to 1.49) compared to employees in managerial positions after adjusting for their baseline characteristics. The issue of a MC was more likely among blue-collar workers, those working in service and sales, agricultural workers, craftsmen,

Table 1. Factors influencing the issue of a MC[d] to the subjects.

	n(%)[b]						
Demographics	**Total**	**MC issued**	**No MC issued**	**COR (95% CI)**	**p-value**	**AOR (95% CI)**	**p-value**
Total	3815 (100)	1105 (22.6)	2710 (77.4)	–	–	–	–
Gender							
Female	1936 (51.4)	635 (18.4)	1244 (81.6)	1	–	1	–
Male	1879 (48.6)	470 (27)	1466 (73)	1.64 (1.58, 1.70)	<0.01*	1.08 (1.02, 1.13)	<0.01*
Ethnic group							
Chinese	2478 (70.6)	566 (17.5)	1912 (82.5)	1	–	1	–
Malay	808 (17)	365 (39.4)	443 (60.6)	3.07 (2.94, 3.20)	<0.01*	2.21 (2.08, 2.35)	<0.01*
Indian	354 (8.4)	115 (23.3)	239 (76.7)	1.43 (1.34, 1.53)	<0.01*	1.12 (1.03, 1.23)	0.01*
Other	175 (4)	59 (38.5)	116 (61.5)	2.95 (2.73, 3.18)	<0.01*	2.17 (1.93, 2.43)	<0.01*
Age group							
>=65	928 (29.9)	40 (4)	888 (96)	1	–	1	–
0–16	740 (12.6)	239 (30)	501 (70)	10.23 (9.43, 11.09)	<0.01*	3.45 (2.85, 4.18)	<0.01*
17–20	344 (1.7)	244 (71.3)	100 (28.7)	59.35 (51.53, 68.36)	<0.01*	9.51 (7.75, 11.68)	<0.01*
21–50	909 (25.5)	443 (46.3)	466 (53.7)	20.57 (19.11, 22.15)	<0.01*	3.97 (3.60, 4.39)	<0.01*
51–64	894 (30.3)	139 (15.1)	755 (84.9)	4.22 (3.91, 4.56)	<0.01*	1.60 (1.46, 1.75)	<0.01*
Education[c]							
Secondary	951 (25.9)	270 (18.2)	681 (81.8)	1	–	1	–
Lower secondary and below	1847 (47.8)	447 (19.3)	1400 (80.7)	1.07 (1.02, 1.12)	<0.01*	1.48 (1.38, 1.59)	<0.01*
Post-secondary/ polytechnic/other diploma	678 (16.8)	281 (34.7)	397 (65.3)	2.38 (2.26, 2.51)	<0.01*	1.13 (1.05, 1.22)	<0.01*
University	321 (9.1)	100 (30.4)	221 (69.6)	1.96 (1.84, 2.09)	<0.01*	1.41 (1.29, 1.54)	<0.01*
Other	15 (0.4)	6 (14.1)	9 (85.9)	0.74 (0.52, 1.05)	0.09	0.21 (0.14, 0.31)	<0.01*
Residential status[c]							
Singaporean	3558 (92.7)	1023 (22)	2535 (78)	1	–	1	–
PR	174 (4.9)	53 (25.8)	121 (74.2)	1.24 (1.14, 1.34)	<0.01*	0.79 (0.71, 0.88)	<0.01*
Foreigners	82 (2.4)	29 (40.1)	53 (59.9)	2.38 (2.16, 2.63)	<0.01*	0.98 (0.85, 1.13)	0.75
Work status[c]							
Employed	1423 (44.4)	501 (33.1)	922 (66.9)	1	–	1	–
Student	588 (6.4)	405 (66.1)	183 (33.9)	3.94 (3.69, 4.21)	<0.01*	1.15 (1.00, 1.33)	0.05
Full-time national service	172 (2.9)	130 (73.7)	42 (26.3)	5.66 (5.12, 6.25)	<0.01*	2.55 (2.26, 2.88)	<0.01*
Unemployed	1148 (37.5)	16 (0.9)	1132 (99.1)	0.02 (0.02, 0.02)	<0.01*	0.03 (0.02, 0.03)	<0.01*
NEET[a]	478 (8.7)	52 (13.2)	426 (86.8)	0.31 (0.28, 0.33)	<0.01*	0.16 (0.14, 0.2)	<0.01*
Housing type[c]							
Private property	401 (9.6)	85 (13.5)	316 (86.5)	1	–	1	–
HDB[e] 1–2 room flat	265 (5.4)	124 (37.1)	141 (62.9)	3.78 (3.43, 4.15)	<0.01*	4.72 (4.11, 5.43)	<0.01*
HDB[e] 3-room flat	796 (20.7)	243 (24.9)	553 (75.1)	2.11 (1.96, 2.29)	<0.01*	2.80 (2.52, 3.12)	<0.01*
HDB[e] 4-room flat	1290 (35.9)	363 (23.5)	927 (76.5)	1.96 (1.82, 2.11)	<0.01*	2.01 (1.82, 2.22)	<0.01*
HDB[e] 5-room flat/ executive flat	937 (25.7)	234 (18.4)	703 (81.6)	1.44 (1.33, 1.56)	<0.01*	1.36 (1.22, 1.50)	<0.01*
Other	112 (2.8)	51 (34.1)	61 (65.9)	3.3 (2.94, 3.71)	<0.01*	2.87 (2.44, 3.38)	<0.01*
Type of diagnosis[c]							
Non-morbid	312 (7.2)	10 (3.3)	302 (96.7)	1	–	1	–
Acute	1449 (41.5)	801 (48.4)	648 (51.6)	27.37 (23.08, 32.45)	<0.01*	24.8 (20.7, 29.71)	<0.01*
Chronic	1506 (51.3)	289 (14.1)	1217 (85.9)	4.8 (4.04, 5.7)	<0.01*	6.88 (5.73, 8.26)	<0.01*

Note: [a]NEET refers to a young person who is not in education, employment or training. [b]Frequencies presented are unweighted, while percentages presented are weighted. [c]The total number of subjects may not tally as some of the fields were left blank. Calculated percentages excluded missing cases. [d]medical certificate. [e]Housing Development Board. *statistically significant.

machine operators, cleaners and labourers, for example (AOR = 1.39, 95%; CI = 1.25 to 1.53).

In terms of industry, the likelihood of sickness certification was higher for those working in the manufacturing industry (AOR = 2.41, 95%; CI = 2.07 to 2.79), followed by the transportation and storage industry (AOR = 1.91, 95%; CI = 1.65 to 2.21) and the construction industry (AOR = 1.90, 95%; CI = 1.59 to 2.28), with the business services industry as the reference. In contrast, those from the financial and insurance industry were less likely to receive sickness certification (AOR = 0.66, 95%; CI = 0.54 to 0.82).

Diagnosis of acute illnesses was a significant determinant for sickness certification among the employees (AOR = 24.51, 95%; CI = 18.96 to 31.68).

Table 2. Factors influencing the issue of a MC[a] to employed subjects only.

Demographics		
Total	**AOR[b] (95% CI)**	**p-value**
Gender		
Female	1	–
Male	1.13 (1.06, 1.21)	<0.01*
Ethnic group		
Chinese	1	–
Malay	2.00 (1.85, 2.16)	<0.01*
Indian	1.03 (0.93, 1.15)	0.54
Other	1.92 (1.68, 2.19)	<0.01*
Age group (years)		
>=65	1	–
17–20	33.03 (12.73, 85.74)	<0.01*
21–50	4.02 (3.6, 4.48)	<0.01*
50–64	1.60 (1.44, 1.76)	<0.01*
Education		
Secondary	1	–
Lower secondary and below	1.47 (1.35, 1.59)	<0.01*
Post-secondary/polytechnic/other diploma	1.36 (1.24, 1.49)	<0.01*
University	2.04 (1.83, 2.28)	<0.01*
Other	0.06 (0.03, 0.12)	<0.01*
Residential status		
Singaporean	1	–
PR	0.71 (0.62, 0.80)	<0.01*
Foreigners	1.13 (0.96, 1.34)	0.13
Housing type		
Private property	1	–
HDB[c] 1–2 room flat	9.1 (7.56, 10.97)	<0.01*
HDB[c] 3-room flat	4.51 (3.91, 5.21)	<0.01*
HDB[c] 4-room flat	2.84 (2.48, 3.26)	<0.01*
HDB[c] 5-room flat/executive flat	1.68 (1.46, 1.93)	<0.01*
Other (e.g. rental, hostel)	3.37 (2.78, 4.09)	<0.01*
Occupation		
Legislators, senior officials and managers/professionals	1	–
Associate professionals and technicians/clerical support workers	1.34 (1.21, 1.49)	<0.01*
Service and sales workers/agricultural workers/craftsmen/ machine operators/cleaners and labourers	1.39 (1.25, 1.53)	<0.01*
Other	1.14 (1.01, 1.28)	0.04*
Industry		
Business services	1	–
Construction	1.90 (1.59, 2.28)	<0.01*
Manufacturing	2.41 (2.07, 2.79)	<0.01*
Accommodation and food service	1.75 (1.49, 2.05)	<0.01*
Financial and insurance	0.66 (0.54, 0.82)	<0.01*
Information and communications	1.66 (1.32, 2.07)	<0.01*
Transportation and storage	1.91 (1.65, 2.21)	<0.01*
Wholesale and retail trade	1.04 (0.89, 1.23)	0.61
Other service industries	1.60 (1.40, 1.83)	<0.01*
Other	1.74 (1.44, 2.10)	<0.01*
Type of diagnosis		
Non-morbid	1	–
Acute	24.51 (18.96, 31.68)	<0.01*
Chronic	6.31 (4.88, 8.17)	<0.01*

Note: *statistically significant. [a]medical certificate. [b]adjusted odds ratio. [c]Housing Development Board.

Medical conditions associated with sickness certification

Table 3 lists the top 10 primary conditions for subjects requiring sickness certification based on their electronic health records. An acute URTI was the most frequent condition (38.7%) among those who obtained sickness certification. In contrast, type 2 diabetes mellitus, hyperlipidaemia and hypertension were the top three diagnoses for which a MC was *not* issued.

Table 3. Top 10 primary diagnoses for patients with/without sickness certification.

Top 10 primary diagnoses for patients without sickness certification (%)		Top 10 primary diagnoses for patients with sickness certification (%)	
Type 2 diabetes	19.2	Acute URTI[a], unspecified	38.7
Hyperlipidaemia, unspecified	12.7	Musculoskeletal, soft tissue or joint condition	12.5
Essential (primary) hypertension	12.6	Gastritis/dyspepsia	5.7
Acute URTI[a], unspecified	6.6	Headache	4.9
Musculoskeletal, soft tissue or joint condition	5.4	Type 2 diabetes	3.3
Dermatological	3.3	Dermatological	3.1
General medical examination	3.0	Essential (primary) hypertension	2.6
Routine child health examination	3.0	Other general symptoms and signs	2.4
Other general symptoms and signs	2.7	Injuries	2.2
Need for immunisation against unspecified combinations of infectious diseases	1.8	Allergic rhinitis, unspecified	1.8

Note: [a]upper respiratory tract infection.

Limitations

Caution has to be exercised in generalising the findings because data pertaining to sickness certification from private GP clinics was not captured in this study. As a result, the magnitude of sickness certification was probably underestimated because patients with acute presentations comprised 65% of their caseload.[9] Deliberate attempts were also made to undertake the surveys during a typical work week and avoid public holidays to reduce the disproportionate higher attendances for acute illnesses. Despite these efforts, the effects of seasonal outbreaks of local infectious diseases such as influenza and dengue fever and other unknown factors on the polyclinic attendances cannot be totally avoided.

The final dataset, which consisted of 3815 individuals who consented to linkage with their electronic health records, contained fewer people than the overall target of 5040. Although the margin of error for our estimates was larger than 3% as originally planned, the study was sufficiently powered to detect differences between some subgroups. We have also compared the demographics of those who were included in this analysis and those who were excluded due to their lack of consent to linkage with their electronic health records or because they were non-respondents. The study included a lower proportion of younger subjects, males and non-Chinese due to the failure to obtain consent to linkage with these groups' electronic health records. Given that sickness certification rates in these groups were higher, the overall rate could have been higher than 22.6% if these groups were to be properly represented.

Discussion

This cross-sectional study provided an insight into the magnitude of and factors associated with outpatient sick leave during a typical week across all the polyclinics. To our knowledge, this is the first study that looked at sickness certification in the public primary healthcare system in Singapore. The commissioning of the survey by an independent research agency attempted to avoid any biased internal data collection from the polyclinics and the survey-weighted data allow for generalisability of the study results to patients visiting the polyclinics in Singapore.

Demographics

Slightly more than one in five subjects (22.6%) in this study were granted sick leave over the one-week survey period. Among employees and students alone, the proportion increased to 33.1% and 66.1%, respectively. This is notably high and likely reflective of the need for sick leave certification from day one. There are challenges in comparing this sickness certification rate with overseas studies due to differing sickness certification policies and methodological differences. Nevertheless, in their systemic review of primary care sickness certification rates, Wynne-Jones et al. noted the highest rate in Malta, which has a similar policy of sickness certification from day one, different to surrounding European countries.[14] It is interesting to note that introduction of self-certification (1–3 days absence) in Norway did not lead to an increased incidence of short-term absence.[15]

In this study, higher rates of sickness certification were noted among younger subjects aged 17–20. This demographic band would typically comprise students and full-time national service personnel who consult the polyclinic for acute conditions and sickness certification as an excuse to remain absent from school/work.

Surrogate indicators of poor socioeconomic status, such as a lower level of education, and living in a small public housing property, such as a 1–2 room flat, were significantly associated with sickness certification. The heavily subsided medical fees in the polyclinics would naturally preselect this stratum of the population and, thereby, influence the results. Nevertheless, further research is needed to ascertain whether sickness absence is indeed higher in this population group.

Sickness certification among employees

The occupations and demography of those who require sickness certification determine the effects on workforce productivity in the respective industry domains. Employees in the manufacturing, transport and construction industries had higher levels of sickness certification. This finding correlated with the local Ministry of Manpower data, which showed that manufacturing industries had the highest proportion of employees taking sick leave (68.8%) with an average of 4.9 sick days per absentee annually.[7] It appeared that sickness

certification was higher in industries operated by a larger workforce within big enterprises that allowed easier cross coverage of duties to accommodate the absentees. Likewise, a similar observation was noted in EU countries where absenteeism was generally lower in smaller firms.[16] The nature of work in manufacturing industries may also influence the taking of sick leave, particularly if heavy machinery or precision work is involved.

A recent report on the labour force in Singapore showed the median age of the workforce to be 43 years in 2015, compared to 40 years in 2006.[17] With fewer entrants to the workforce coupled with an increase in the retirement age (as of 2016, age 67), the proportion of senior workers is expected to increase. This may result in a corresponding increase in sickness absenteeism, a trend noted in overseas studies.[18–19] See B et al, in their commentary on the Singapore workforce highlighted this similar concern and argued for judicious use of sick leave, noting the negative effects of long-term sickness absence on individual health and subsequent employment.[20] We agree with the need for a more work-focused healthcare dialogue between healthcare professionals and employers to promote workplace wellbeing and safety and explore avenues that would encourage an appropriate return to work.

Medical conditions associated with sickness certification

The diagnosis of acute conditions had the greatest association with sickness certification (AOR = 24.8, 95%; CI = 20.7 to 29.71). A corresponding 801 out of 1105 (72.5%) people were issued with MCs for acute conditions. An acute URTI (38.7%) and musculoskeletal complaints such as sprains and backache (12.5%) together accounted for slightly over 60% of all sickness certification. This mirrors the findings by Soler et al. in Malta, where the average duration of each sickness was 2.9 days with URTIs, sprains and gastroenteritis being the most common diagnoses.[18] Similarly, URTIs accounted for 31% of sickness certification in Oman,[21] another country that requires sickness certification from day one.

Most acute conditions such as the common cold are self-limiting and symptoms can be relieved with over-the-counter medications on sale at pharmacies. Sickness certification in these instances can potentially be replaced with self-declaration of sick leave. Employers' concerns about potential abuse should be acknowledged, but safeguards can be implemented to contain this, such as a restriction on the number of days of self-declared sick leave as in other countries. Such a policy and measures have been partly introduced in the civil service but have yet to be scaled up significantly in the private sector. Currently, selected schools and institutions have adopted policies where letters written by parents and guardians are accepted in place of MCs to excuse their children or wards from school. Such measures could be scaled up as most of these healthy students recovered quickly from acute illnesses.

Sickness certification for chronic conditions (14.1%) did not constitute a large proportion of the sample. This was a positive finding in that sick leave was not utilised for chronic disease follow-up. Furthermore, a proportion of the MCs may have been issued for the accompanying caregiver to apply for family care leave. It was also possible that subjects presented with both chronic and acute conditions for which sickness certification was necessary. Employees may have made arrangements with their employers for time off or might have been engaged in shift work, thus allowing them to follow up during office hours. The Ministry of Manpower, Singapore, revealed that in 2016, up to 82% of local companies used unplanned time off arrangements to allow their staff to go for a medical consultation.[7] Such measures may have helped to reduce the volume of sickness certification imposed on the primary healthcare professionals at the polyclinics for these employees.

A proportion of employees might also have been seeing their company or private GP for follow up of any chronic disease. In addition, we do not exclude the possibility of employees failing to consult their PCP about any chronic conditions. Future studies could explore whether the need for sickness certification impacts chronic disease follow up adversely.

The findings of this study highlight the fact that sickness certification patterns were predominated by short-term absence for acute conditions. At the same time, the study served as a benchmark to characterise the emerging sickness absenteeism observed among employees likely brought about by demographic shifts in Singapore. Future research could expand to include sick leave in the private sector and hospitalisation leave. This would afford a more comprehensive review and provide guidance for policymaking with regard to sickness certification and workplace health.

Conclusions

Sickness certification remains a common task for PCPs during public primary care consultations. Sick leave was granted to 22.6% of subjects in this study, the average length being 1.42 days. A higher proportion of younger subjects, those living in 1–2 room public housing and employees working in the manufacturing, transport and construction industries took sick leave. The major reason for sickness certification was acute conditions, a URTI being the most frequent diagnosis. Possible mitigation measures may include increased dialogue between healthcare professionals and employers, expanding the sick leave self-declaration policy and the acceptance of a parental/guardian letter of excuse for students in place of a MC. The exclusion of private primary care clinics probably underestimated the magnitude of sickness certification.

Authors' contributions

TNC, DNCC, LYJ and MOH officials conceptualised, designed and implemented the study protocol. LJ was the principal investigator while DNCC and LYJ were the site principal investigators regarding the respective clusters of polyclinics, and they provided oversight of the survey implementation. EKYL, HVN and WHB organised and analysed the data. DNCC, LYJ and TNC interpreted the findings and drafted the manuscript. All authors reviewed and approved the final manuscript.

Disclaimer

The views expressed in the article represent a consensus of the authors and do not necessarily represent the official position or policies of the named in this article.

Data sharing

The authors' funding agency only permits sharing of data with those with whom they have a written agreement. This has been imposed by our IRB as well as local funding entities (Ministry of Health Singapore). Data sharing with clear research purposes, after the signing of a research collaboration agreement, is available upon request by contacting the corresponding author, David Ng Chee Chin.

Declaration of conflicting interests

DNCC is also a part-time professional staff at the Ministry of Health Singapore.
The remaining authors declare that there is no conflict of interest.

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Ethics approval

The study received approval from the SingHealth Centralised Institutional Review Board (CIRB reference 2014/615/A) and the National Healthcare Group Domain Specific Review Board (DSRB reference 2014/00439). All subjects were recruited on a voluntary basis.

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