Received: 8 February 2019 | Revised: 29 July 2019 | Accepted: 29 July 2019

DOI: 10.1111/spol.12538

SPECIAL ISSUE

WILEY

Poverty affects access to regular source of primary care among the general population in Hong Kong

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Funding information
Research Grants Council of the Hong Kong Special Administrative Region, China, Grant/Award Number: 4003-SPPR-11; Central Policy Unit of the Government of the Hong Kong Special Administrative Region

Abstract

A territory-wide two-stage stratified random sample of 2,282 community-dwelling Hong Kong adults were surveyed between 2014 and 2015 to investigate the association between poverty and regular source of primary care utilization. Poverty was operationalized by income-poverty and deprivation. About 94% of our sample reported having regular source of primary care (Western and/or Chinese medical practitioner) and about 69% among them were in private sector. Multivariable logistic regression showed that people who were income-poor and deprived were less likely to have regular source of primary care (income-poor: OR = 0.523, p = .027; deprived: OR = 0.488, p = .007) and visit private primary care doctors (income-poor: OR = 0.445, deprived: OR = 0.222, both p < .0001). Those who had chronic diseases were more likely to have regular source of primary care (multimorbid: OR = 10.709, p < .0001), but less likely to access care in the private sector (one chronic disease: OR = 0.690, p = .019; multimorbid: OR = 0.374, p < .0001) than those without. Further, being older and less skilled were significantly associated with less likelihood of visiting a private doctor. Path analysis showed that the number of chronic diseases had significant indirect effect on having regular source of primary care with being income-poor and deprived as the mediators (β = −.0183, p = .0016). Therefore, despite a public health-care system that aims to deny no one from adequate health care for lack

of means, regular source of primary care in Hong Kong is found to be pro-rich. Future policies should tackle the problem of health-care inequalities to meet the needs of the underprivileged.

KEYWORDS
deprivation, health inequality, Hong Kong, multimorbidity, poverty, primary care

1 | INTRODUCTION

Primary care is essential in an effective health-care system serving as "the first level of contact of individuals, the family and the community with the national health system, bringing health care as close as possible to where people live and work" (World Health Organization & International Conference on Primary Health Care (1978: Alma Ata), 1988). Abundant evidence points to its effectiveness in health promotion, prevention, assessment, and management of diseases, and strengthening continuity of care (Hill, Griffiths, & Gillam, 2007; Macinko, Starfield, & Shi, 2003; Starfield, Shi, & Macinko, 2005). High-quality primary care is associated with better health outcomes (Gray et al., 2003; Starfield, 1998; Wong et al., 2010), reduced mortality (Starfield et al., 2005; Wolinsky et al., 2010) and hospitalizations (Chung et al., 2016; Einarsdóttir, Preen, Emery, Kelman, & Holman, 2010; Starfield et al., 2005), improved preventive care (De Maeseneer, De Prins, Gosset, & Heyerick, 2003; Starfield et al., 2005), and a more equitable distribution of health within and across populations (Shi & Starfield, 2000; Starfield et al., 2005; Wong et al., 2010).

Despite its importance, research has consistently found evidence of inequities in access to primary care. Limited access tends to affect the most vulnerable and socially disadvantaged in the communities (Clancy & Stryer, 2001; Harris, Harris, & Roland, 2004; Meyer, Luong, Mamerow, & Ward, 2013; Piccardi, Detollenaere, Vanden Bussche, & Willems, 2018; Starfield et al., 2005). These findings largely represent a phenomenon known as the inverse care law, which describes that those who are in need of good medical care tend not to receive it (Hart, 1971), and the law also operates more profoundly when medical care is more exposed to market forces. Because it makes intuitive sense that a private market force will induce inequality in health care, on the flip side, it is also easy to assume that the presence of a public health-care system provided by the government that is made affordable and accessible to all members of the general public may solve all the problems. Nevertheless, this may not be true, as illustrated by the case of Hong Kong.

The Hong Kong Special Administrative Region of China has a mixed health-care system with both public (i.e., the government) and private sectors providing health care. It prides itself on providing a highly subsidized health care through general taxation and revenues for its citizens based on the principle that "no one should be denied adequate medical treatment due to lack of means" (Food and Health Bureau, 2010). However, studies have found inequality in terms of primary care services, as summarized in a review by Chung and Wong (2015). Previous studies have established the negative association between socio-economic measures (e.g., education and income) and access to regular source of primary care (Owolabi et al., 2013; Wong et al., 2010). Although income can be a functional proxy indicator of financial vulnerability as a barrier to access, it is only part of the financial resources of an individual because other liquid assets and social disadvantages are not taken into account. Crucial dimensions of poverty involving nonmonetary resources and social barriers to achieving improved living standards may be overlooked if only income-poverty or these socio-economic proxy indicators are used. Considering these limitations, Townsend's theory of relative deprivation (Townsend, 1987), which defines poverty as lack of command over sufficient resources over time, and "a state of observable and demonstrable disadvantage relative to the local community or the wider

society or nation to which an individual, family or group belongs," is increasingly adopted in the literature, including in Hong Kong (Saunders, Wong, & Wong, 2014).

This conception of poverty is not without criticism. In particular, Townsend conceived that there is a breakpoint below which participation in terms of "ordinary living patterns, customs and activities" decline disproportionately. However, this conception was not confirmed by Gordon and colleagues using more sophisticated quantitative techniques later on (Gordon et al., 2000; Gordon & Townsend, 1990). Despite failing to demonstrate Townsend's conception of a breakpoint quantitatively, considerable amount of qualitative evidence exists to show that people often do feel the consequences of poverty manifested in the frustration brought about by the inability to participate fully in society (Hooper, Gorin, Cabral, Dyson,, & Frank Buttle Trust, 2007; Horgan, 2007; Kempson, 1996; Sutton, Smith, Dearden, & Middleton, 2007). Another explanation for the indefinite presence of such a breakpoint is the choice of indicators used to measure and define deprivation (Piachaud, 1981). Depending on how deprivation is measured, some indicators may be reflective of the taste rather than of actual need or social participation, especially in modern societies where consumption and participation patterns may be influenced by lifestyle choices (Festenstein, 2005; Tomlinson, 2003; Warde & Tomlinson, 1995). Despite these limitations, previous studies in Hong Kong (Chung, Chung, Chan, et al., 2018; Chung, Chung, Gordon, et al., 2018; Saunders et al., 2014) measured deprivation using questions that pertain to affordability of items, customs, services, and ability to participate in activities that are perceived to be basic necessities in the local context, thereby minimizing the influence of taste and preference in the measurements of deprivation.

Although deprivation has been found to be associated with worse physical and mental health in Hong Kong independent of the effects of income-poverty (Chung, Chung, Gordon, et al., 2018), little is known about whether and how income-poverty and deprivation affect access to regular source of primary care services. The current study addresses this question and is also the first to attempt a closer look at the extent to which income-poverty and deprivation influence the relation between health needs and use of regular primary care.

2 | BACKGROUND

Like many other developed parts of the world, Hong Kong is facing a rapidly aging population and the increasing burden of chronic diseases. The number of older persons aged 65 or above is estimated to double in the coming 20 years, making up about one third of its population (Census and Statistics Department, 2017). The older population tend to incur large health-care needs due to the high prevalence of chronic condition, and the long-term care expenditure among older persons is predicted to increase from 1.4% in 2004 to 4.9% of GDP by 2036 (Chung et al., 2009). About 800,000 older adults live with one or more chronic diseases, among whom 10% suffer from four or more chronic diseases (Census and Statistics Department, 2009). All these are contributing to the steep climb in medical spending at a faster rate, raising the concern of affordability of health care (Lai & Leung, 2010).

The public–private split in outpatient services, and thus primary care services, in Hong Kong is about 30:70 (Tin et al., 2016). In the public sector, primary care is mainly provided in the Hospital Authority (HA) General Outpatient Clinics (GOPCs) at a nominal fee of approximately US$6, with some in the HA Specialist Outpatient Clinics at around US$8. Other than the HA, the Department of Health offers primary care services, focusing on preventive and promotional public health services. However, the GOPCs are still regarded as the default channel of primary care in the public sector. Patients attending these public clinics are assigned a doctor from the team on duty at each of their visits. Recipients of financial assistance of social security from the Comprehensive Social Security Assistance scheme can have the costs for services completely or partially waived.

In the private sector, charges vary depending on the doctor, the specialty, the location, nature of the consultation, among other factors and tend to be at least five times more expensive than the public sector at median net consultation fee of around US$32 per visit (The Hong Kong Medical Association, 2014). About 30% of the population have private insurance or benefit scheme coverage, mostly from employment-based programmes

(Leung & Bacon-Shone, 2006). Private primary care services are not provided solely by general practitioners (GPs) or family physicians and can be administered by physicians of other specialties. GPs in Hong Kong are generalists who are not family medicine specialists, whereas family physicians are family medicine specialists who are Fellows of the Hong Kong Academy of Medicine and completed additional vocational training and professional examinations. Because Hong Kong does not mandate registration for doctors who provide primary care services, some patients would bypass the traditional GPs and Family Physicians to consult doctors of other specialties directly, and this is not uncommon. About half of the medical specialists work in the private sector and provide a combination of specialty and general practice services. In the private sector that is dominated by private outpatient clinics that one could conveniently find on the streets and in public housing estates, the patients usually have the option of choosing which doctor to consult and provide care for them, whereas some private hospitals also offer outpatient services that may offer the options for patients to indicate their preference for usually visited doctors.

In addition to Western allopathic care, Chinese medicine care is a common option residents sought, because many ethnic Hong Kong Chinese still explain and understand their illness by way of their ethno-specific traditional medical concepts (Lam, 2001; Leung & Bacon-Shone, 2006). Although popular, visits with Chinese medicine practitioner occupy a relatively minor niche role in the system, and Western medicine care is still considered the mainstream model (Leung & Bacon-Shone, 2006). In light of these local contexts, access to regular source of primary care in this study is defined as having a usually visited doctor or site (Western/Chinese medicine), whom or where the subject would first visit when s/he was sick or needed preventive health-care services.

In order to promote and strengthen the concept and practice of primary care, there has been a focus on developing public–private partnerships (PPPs) on the primary care level in recent years. A couple of notable initiatives to promote access under these partnerships are the Patient Empowerment Programme, GOPC-PPPs, and the Elderly Health Care Voucher Scheme. Clinically stable patients with hypertension and/or diabetes mellitus attending the GOPCs for disease management purposes are eligible for the GOPC-PPP programme. Each year, eligible patients receive subsidies for up to 10 consultations for chronic and episodic illnesses in the private sector by practitioners who are enrolled in the programme, and for the prescribed medications from the visits, all at the same rate they pay at the GOPCs. In the Elderly Health Care Voucher Scheme, all eligible older persons are given a voucher of value equivalent to about $US250 annually to choose private health-care services of their own choice that best suit their needs, including preventive care (Health Care Voucher—Background of Elderly Health Care Voucher Scheme, 2018).

Although the significant government subsidies make medical services in the public sector generally affordable and accessible to all local residents with no or minimal copayment, a Hong Kong population-based household survey (Wong et al., 2018) found that up to 8.4% did not seek medical care due to lack of financial means during the past year, and they were more likely to be income-poor and sicker, implying that those with greater health-care needs may have greater financial barriers to receive care. Building on the existing evidence on access, utilization, and experiences of primary care services varying across different socio-economic groups in Hong Kong (Lian et al., 2013; Wong et al., 2010; Yam, Mercer, Wong, Chan, & Yeoh, 2009), the current study adds insights on how poverty affects access to regular source of primary care. By including deprivation into the same analysis, we will be able to take into account the important dimensions of nonmonetary resources and social barriers that may not be adequately captured by income-poverty alone or other proxy indicators of socio-economic status, as commonly used in previous studies. We hypothesized that, despite the presence of a highly subsidized health-care system, people who are living in poverty have lower level of access to regular source of primary care and lower access in the private sector, after adjusting for health needs and socio-demographic factors, and that the impact of deprivation goes beyond that of income-poverty. We also hypothesized that poverty mediated the association between health needs and regular source of primary care.

3 | METHODS

3.1 | Study design and subjects

The current research used the first-wave data of the Trends and Implications of Poverty and Social Disadvantages in Hong Kong: A Multi-disciplinary and Longitudinal Study, which was part of a larger project, Social Disadvantages, Well-being and Health in Hong Kong. The data were collected between June 2014 and August 2015 through structured face-to-face interviews from a random sample of households drawn from 25,000 addresses and 200 segments by the Census and Statistics Department based on the frame of living quarters (i.e., residential dwellings). In a two-stage stratified sample design, a random sample of living quarters were first selected, then households residing in these quarters were randomly selected for inclusion in the next stage of sampling. A respondent aged 18 years or above within each included household was then recruited. If the household had more than one adult, the one whose birthday was coming up next would be selected. The final sample consisted of 2,282 household respondents, with the response rate of 60.2%. A total of 2,268 questionnaires with valid data were included in this analysis.

3.2 | Measurements

3.2.1 | Access to regular source of primary care

Respondents reported whether they had a usually visited doctor with whom they would first consult when they were sick or needed preventive services, and whether they had a Western/Chinese medical practitioner or both. The corresponding health-care sector (public vs. private) that the doctors belonged to was also recorded.

3.2.2 | Socio-demographic factors

Respondents answered questions about their socio-demographic profile. Reported age was categorized into seven age groups: 18–29, 30–39, 40–49, 50–59, 60–69, 70–79, and 80 and above. Gender was measured as a dichotomous indicator: male and female. Reported marital status was classified into two categories: married (including cohabitation) and unmarried (including never married, divorced, separated, or widowed). Education level was measured as primary or below, secondary, and tertiary or above. Based on the four International Standard Classification of Occupation 2008 (ISCO-08) skill levels of the International Labor Organization, respondents' current or last job was classified into the following: Skill Level 3 or 4: managers and administrators/professionals/associate professionals, Skill Level 2: clerical support workers/service and sales workers/craft and related workers/plant and machine operators and assemblers, and Skill Level 1: elementary occupations/others). Students and homemakers were also included in the analysis.

3.2.3 | Poverty measures

Current study used equalized household income to measure income-poverty. Respondents were asked to estimate their total pre-tax monthly household income including social security benefits. Equalized household income was then derived by dividing this reported household income by the square root of household size to allow for economies of scale when comparing different sized households (Organization for Economic Cooperation and Development, 2012). People with equivalized monthly household income below half of sample's median equivalized household monthly income were classified as “Poor,” whereas those above were classified as “Non-Poor.”

Following Townsend's concept of relative deprivation defined as a lack of command over resources covering material and social necessities (Townsend, 1987), a deprivation index (DI) was used to assess if respondents could not afford a range of items that are considered to be necessities of life that no one in Hong Kong should have to go

without. To construct the DI, 301 respondents in our sample were randomly selected to answer whether they considered a list of material-based and social items adapted from previous studies as necessities (Chung, Chung, Gordon, et al., 2018). Items that were perceived by half or more of the respondents as necessities were included in the DI. A total of 21 items were included in the final DI, and they measured if respondents were deprived of a particular item because they could not afford it but not due to personal preference (Mack & Lansley, 1985). The DI showed a great reliability with the Cronbach alpha at .832. A DI score of 2 or above was considered "Deprived."

3.2.4 | Medical conditions

Medical conditions were used to proxy health needs. Respondents reported the number of chronic diseases diagnosed by a western medical practitioner. This has been considered a valid and reliable method to collect self-reported chronic diseases diagnosis in a large-scale study (McGuire, Ford, & Ajani, 2006).

3.3 | Statistical analysis

Participants in this study were older and had lower educational levels when compared with Hong Kong's general population. The raw data were weighted using Hong Kong resident population by age and sex at mid-2014 to ensure the representativeness of the results. All figures presented were based on the weighted sample. Descriptive statistics of socio-demographic variables, poverty measures, and number of chronic diseases were calculated for those who had regular source of primary care in comparison with those who did not, as well as for those who had access to private versus public doctors. Proportion of having regular source of primary care in our sample was estimated, and intersectional characteristics by status of income-poverty and deprivation level were also examined. In particular, we focused on the associations of having regular source of primary care with equivalized household income and deprivation to detect any social gradient of inequalities in terms of health care.

Bivariate logistic analysis was conducted to identify the associations of the characteristics with access to regular source of primary care and the type of sector the health-care provider belonged to, and odds ratios (ORs) and 95% confidence intervals (CIs) were obtained for each of the variables. Socio-demographic characteristics by status of income-poverty and deprivation level were also examined to understand the intersectionality of poverty for our subjects. All the variables in the bivariate analysis were further examined using forward stepwise multivariable logistic regression. Path analysis in the form of multivariable regression was then conducted to determine the direct effect of medical conditions on access of regular source of primary care, and the indirect effects of medical conditions via income-poverty and deprivation on access of regular source of primary care, adjusted for other socio-demographic variables.

SAS 9.4 was used for the statistical analyses in our study, and the significance level was set at .05.

4 | RESULTS

4.1 | Descriptive statistics and intersectional issues

Table 1 presents the descriptive statistics of characteristics by the status of having regular source of primary care and the type of sector the health-care provider belonged to. Of the 2,268 participants after weighting, 94.1% reported having regular source of primary care, be it a Western or Chinese medical practitioner or Western and Chinese medical practitioners at the same time. This percentage became 67.3% when Chinese medical practitioners were not counted in the analyses (data not shown). The socio-demographic profiles of those who had and did not have regular source of primary care were generally comparable; however, there was a higher chance for those without regular source to be income-poor and deprived and to have less chronic diseases. On the other hand, for those who had regular source of primary care, 68.6% were in the private sector. Whereas all other characteristics being

TABLE 1 Descriptive sample statistics (weighted)

Variables	Regular source of primary care[a]		Type of sector[b]	
	Yes	No	Private	Public
	(*n* = 2,134, 94.1%)	(*n* = 134, 5.9%)	(*n* = 1,380, 68.6%)	(*n* = 632, 31.4%)
Age group				
18–29	389 (18.2%)	26 (19.4%)	310 (22.5%)	54 (8.5%)
30–39	382 (17.9%)	31 (23.1%)	302 (21.9%)	58 (9.2%)
40–49	403 (18.9%)	23 (17.2%)	265 (19.2%)	113 (17.9%)
50–59	429 (20.1%)	26 (19.4%)	266 (19.3%)	141 (22.3%)
60–69	268 (12.6%)	20 (14.9%)	127 (9.2%)	123 (19.5%)
70–79	148 (6.9%)	6 (4.5%)	63 (4.6%)	79 (12.5%)
80+	114 (5.3%)	2 (1.5%)	47 (3.4%)	64 (10.1%)
Gender				
Female	1,162 (54.5%)	76 (56.7%)	728 (52.8%)	352 (55.7%)
Male	972 (45.6%)	58 (43.3%)	651 (47.2%)	280 (44.3%)
Marital status				
Married/cohabitation	1,313 (61.6%)	83 (62.4%)	856 (62.1%)	379 (60.1%)
Single/divorced/separated/widowed	819 (38.4%)	50 (37.6%)	522 (37.9%)	252 (39.9%)
Education level				
Tertiary or above	413 (19.5%)	22 (16.5%)	334 (24.3%)	54 (8.6%)
Secondary	1,165 (54.9%)	81 (60.9%)	786 (57.3%)	315 (50.2%)
Primary or below	545 (25.7%)	30 (22.6%)	252 (18.4%)	259 (41.2%)
Occupation				
Skill Level 3/4	303 (14.6%)	12 (9.2%)	239 (17.7%)	50 (8.3%)
Skill Level 2	817 (39.4%)	56 (43.1%)	568 (42.0%)	206 (34.4%)
Skill Level 1	401 (19.4%)	27 (20.8%)	214 (15.8%)	164 (27.4%)
Student	111 (5.4%)	9 (6.9%)	80 (5.9%)	20 (3.3%)
Homemaker	440 (21.2%)	26 (20.0%)	250 (18.5%)	159 (26.5%)
Income poverty				
Nonpoor	1,687 (85.5%)	89 (76.7%)	1,189 (92.5%)	391 (68.4%)
Poor	287 (14.5%)	27 (23.3%)	96 (7.5%)	181 (31.6%)
Deprivation				
Nondeprived	1,555 (83.7%)	79 (70.5%)	1,120 (91.9%)	341(64.5%)
Deprived	302 (16.3%)	33 (29.5%)	99(8.1%)	188(35.5%)
Number of chronic disease				
0	1,259 (59.0%)	105 (78.4%)	922 (66.8%)	249 (39.5%)
1	472 (22.1%)	21 (15.7%)	292 (21.2%)	157 (24.9%)
2+	403 (18.9%)	8 (6.0%)	166 (12.0%)	225 (35.7%)

[a]Includes both Western and Chinese medicine practitioner. [b]Nine participants selected both private and public were excluded.

TABLE 2 Characteristics by status of income poverty and deprivation (%)

Variables	Total (*n* = 1,842)	Income poor		Nonincome poor	
		Deprived (*n* = 118, 6.4%)	Nondeprived (*n* = 142, 7.7%)	Deprived (*n* = 184, 10.0%)	Nondeprived (*n* = 1,398, 75.9%)
Age group					
18–29	17.8	9.2	7.5	8.3	20.9
30–39	19.1	7.5	8.7	14.9	21.7
40–49	20.2	21.2	9.5	30.4	19.8
50–59	20.4	17.6	15.9	23.0	20.8
60–69	12.1	15.4	20.6	17.4	10.3
70–79	6.1	13.9	20.6	5.5	4.0
80 and above	4.3	15.1	17.1	0.6	2.5
Gender					
Female	53.2	58.0	51.0	61.3	52.0
Male	46.8	42.0	49.0	38.7	48.0
Marital status					
Married/cohabitation	63.0	44.6	50.2	71.2	64.8
Single/divorced/separated/widowed	37.0	55.4	49.8	28.8	35.2
Education level					
Tertiary or above	19.8	7.6	5.0	7.0	24.1
Secondary	57.0	44.7	44.1	62.7	58.6
Primary or below	23.1	47.7	50.9	30.3	17.2
Occupation					
Skill Level 4/3	14.8	5.5	5.5	4.6	17.7
Skill Level 2	39.1	32.2	34.1	32.8	40.9
Skill Level 1	19.9	34.0	34.9	28.1	16.2
Student	5.4	1.3	4.1	5.1	5.9
Homemaker	20.9	27.0	21.4	29.4	19.2
Employed					
No	45.8	78.5	88.1	52.7	37.8
Yes	54.2	21.5	11.9	47.3	66.2
Number of chronic disease					
0	61.4	47.6	34.9	55.2	66.1
1	22.0	23.5	30.6	22.4	20.9
2 or above	16.6	28.8	34.5	22.5	13.0
Type of usually visited health-care sector					
Private	70.6	28.3	47.5	40.4	80.2
Public	29.4	71.7	52.5	59.6	19.8
CSSA					
No	84.0	41.6	45.5	84.1	91.4
Yes	16.0	58.4	54.5	15.9	8.6

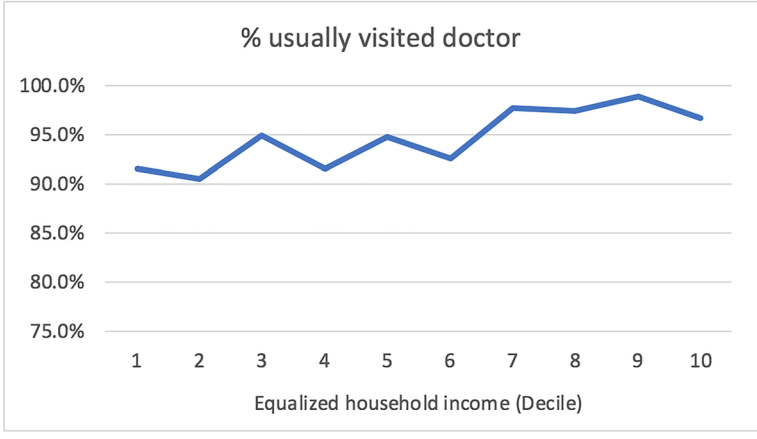
Abbreviation: CSSA, Comprehensive Social Security Assistance.

comparable, those who had regular source of primary care in the public sector were prone to be older, less educated, less skilled, more income-poor, more deprived, and more multimorbid (i.e., having more than one chronic disease).

Table 2 shows the intersectional characteristics by status of income-poverty and deprivation level. There was no obvious overlap between income-poverty and deprivation, with 6.4% being income-poor and deprived, 7.7% being income-poor and nondeprived, and 10.0% being non-income-poor but deprived. Those who were both income-poor and deprived had the highest chance for having regular source of primary care in the public sector (71.7%) and receiving social security (58.4%). Also, there was a higher chance of having regular source of primary care in public than in private sector for those who were deprived but non-income-poor (59.6%), and for those who were income-poor but nondeprived (52.5%). However, for the non-income-poor and nondeprived, there was a much lower chance of having regular source of primary care in the public sector (19.8%). Moreover, the deprived non-income-poor tended to be younger and employed (47.3%) compared with the rest, whereas a high percentage of income-poor were not employed (78.5% and 88.1% among deprived and nondeprived). Income-poverty is highly correlated with receiving social security; even for those nondeprived income-poor, the chance of receiving social security were 54.5%.

Figure 1 illustrates the relationship of having regular source of primary care with equivalized household income and deprivation index, and we found that those in the lower household income deciles and with greater deprivation were particularly affected and tended to have lower chance of having regular source of primary care.

(a)



(b)

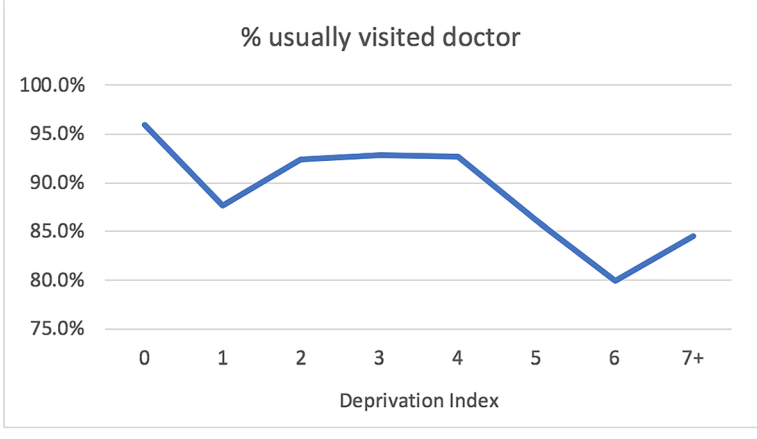


FIGURE 1 Regular source of primary care across social gradient—Relationship of % regular source of primary care with (a) equivalized household income (decile) and (b) deprivation index. [Colour figure can be viewed at wileyonlinelibrary.com]

TABLE 3 Odds ratio (OR) and 95% confidence interval (CI) for factors associated with having regular source of primary care and the type of sector in bivariate analysis

	Regular source of primary care[a]		Type of sector[b]	
Variables	**OR [95% CI]**	***p* value**	**OR [95% CI]**	***p* value**
Age group				
18–29	Ref	—	Ref	—
30–39	0.822 [0.479, 1.410]	.476	0.908 [0.607, 1.356]	.636
40–49	1.168 [0.655, 2.081]	.599	0.413 [0.287, 0.593]	**<.0001**
50–59	1.094 [0.625, 1.914]	.753	0.318 [0.233, 0.472]	**<.0001**
60–69	0.912 [0.497, 1.673]	.767	0.181 [0.124, 0.265]	**<.0001**
70–79	1.635 [0.662, 4.041]	.287	0.139 [0.090, 0.216]	**<.0001**
80+	3.183 [0.833, 12.166]	.091	0.130 [0.081, 0.209]	**<.0001**
Gender				
Female	Ref	—	Ref	—
Male	1.083 [0.762, 1.539]	.656	1.123 [0.930, 1.357]	.229
Marital status				
Married/cohabitation	Ref	—	Ref	—
Single/divorced/separated/widowed	1.032 [0.719, 1.480]	.865	0.917 [0.756, 1.112]	.378
Education level				
Tertiary or above	Ref	—	Ref	—
Secondary	0.758 [0.466, 1.321]	.263	0.406 [0.296, 0.556]	**<.0001**
Primary or below	0.967 [0.549, 1.705]	.909	0.158 [0.113, 0.221]	**<.0001**
Occupation				
Skill Level 3/4	Ref	—	Ref	—
Skill Level 2	0.598 [0.318, 1.123]	.110	0.579 [0.411, 0.817]	**.002**
Skill Level 1	0.594 [0.298, 1.181]	.138	0.274 [0.190, 0.395]	**<.0001**
Student	0.475 [0.198, 1.140]	.096	0.827 [0.465, 1.470]	.517
Homemaker	0.699 [0.349, 1.402]	.314	0.330 [0.229, 0.475]	**<.0001**
Income poverty				
Nonpoor	Ref	—	Ref	—
Poor	0.555 [0.355, 0.868]	**.010**	0.174 [0.132, 0.228]	**<.0001**
Deprivation				
Nondeprived	Ref	—	Ref	—
Deprived	0.466 [0.305, 0.714]	**<.0001**	0.161 [0.122, 0.211]	**<.0001**
Number of chronic disease				
0	Ref	—	Ref	—
1	1.884 [1.165, 3.049]	**.010**	0.501 [0.394, 0.636]	**<.0001**
2+	4.027 [1.973, 8.220]	**<.0001**	0.199 [0.156, 0.254]	**<.0001**

Bold: Statistical significance ($p < .05$)

[a]Comparison group: No regular source of primary care. [b]Comparison group: Public sector.

4.2 | Bivariate and multivariable analyses

Table 3 presents the bivariate associations between the independent variables and the two outcomes of (a) having regular source of primary care or not and (b) regular source of primary care in the private or public sector. The deprived and the income-poor were less likely to have regular source of primary care, whereas those who had one chronic disease and those who were multimorbid were more likely than those without any to have regular source of primary care. On the other hand, being older, less educated, less skilled, deprived, income-poor, having one chronic disease and being multimorbid were all negatively associated with visiting private providers. Results of multivariable logistic model are shown in Table 4. People who were deprived and income-poor were less likely to have regular source of primary care (deprived: OR = 0.488, 95% CI [0.291, 0.819], p = .007; income-poor: OR = 0.523, 95% CI [0.295, 0.927], p = .027) and to visit the private sector for care (deprived: OR = 0.222, 95% CI [0.161, 0.306], p < .0001; income-poor: OR = 0.445, 95% CI [0.313, 0.633], p < .0001). Those who had one chronic disease were more likely to have regular source of primary care (OR = 1.632, 95% CI [0.953, 2.794],

TABLE 4 Odds ratio (OR) and 95% confidence interval (CI) for factors associated with having regular source of primary care and the type of sector in stepwise multiple logistic regression

	Regular source of primary care[a]		Type of sector[b]	
Variables	**OR [95% CI]**	***p* value**	**OR [95% CI]**	***p* value**
Age group				
18–29			Ref	—
30–39			0.960 [0.558, 1.653]	.884
40–49			0.594 [0.358, 0.986]	**.044**
50–59			0.539 [0.323, 0.899]	**.018**
60–69			0.333 [0.191, 0.579]	**<.0001**
70–79			0.396 [0.207, 0.755]	**.005**
80+			0.465 [0.227, 0.950]	**.036**
Occupation				
Skill Level 3/4			Ref	—
Skill Level 2			0.823 [0.543, 1.246]	.358
Skill Level 1			0.573 [0.365, 0.900]	**.016**
Student			0.555 [0.256, 1.202]	.136
Homemaker			0.552 [0.354, 0.861]	**.009**
Income poverty				
Nonpoor	Ref	—	Ref	—
Poor	0.523 [0.295, 0.927]	**.027**	0.445 [0.313, 0.633]	**<.0001**
Deprivation				
Nondeprived	Ref	—	Ref	—
Deprived	0.488 [0.291, 0.819]	**.007**	0.222 [0.161, 0.306]	**<.0001**
Number of chronic disease				
0	Ref	—	Ref	—
1	1.632 [0.953, 2.794]	.074	0.690 [0.506, 0.940]	**.019**
2+	10.709 [2.986, 38.410]	**<.0001**	0.374 [0.266, 0.526]	**<.0001**

Bold: Statistical significance (p < .05)

[a]Comparison group: No regular source of primary care. [b]Comparison group: Public sector.

p = .074), but less likely to visit private providers (OR = 0.690, 95% CI [0.506, 0.940], p = .019) than those without any chronic diseases. Similarly, those who were multimorbid were more likely to have regular source of primary care (OR = 10.709, 95% CI [2.986, 38.10], p < .0001), but less likely to visit a private provider (OR = 0.374, 95% CI [0.266, 0.526], p < .0001). Being older and less skilled were also significantly associated with less likelihood of visiting a private provider.

4.3 | Path analysis

Figure 2 presents the results of the path analysis. The regression had a good model fit (i.e., adjusted goodness of fit index = 0.7997, standardized root mean square residual = 0.0731, and Bentler–Bonett = 0.8331). Estimates in the path diagram were adjusted for socio-demographic covariates, and none was statistically significant. Having more chronic diseases was positively associated with having regular source of primary care (β = .1215, p < .0001), and being deprived and income-poor were negatively associated with having regular source of primary care (deprived: β = −.0731, p < .0001; income-poor: β = −.0541, p < .0001). In addition, the number of chronic diseases had a significant indirect effect on having regular source of primary care with being deprived and income-poor as mediating variables (β = .1032 * (−.0731) + .1977 * (−.0541) = −.0183, p = .0016).

5 | DISCUSSION

The age–gender-weighted sample (94.1%) had regular source of primary care, but this percentage became 67.3% when Chinese medical practitioners were not included in the analyses, making it comparable with the previous studies (Fung, Wong, Fong, Lee, & Lam, 2015; Wun, Lam, & Sun, 2015; Lam et al., 2015; Wong et al., 2017). Our path analyses showed that those who have more health needs would be more likely to have regular source of primary care, but poverty would reduce that likelihood. This is an important finding, because whether someone has a regular source of primary care is not only an effect of his or her health needs but also a matter of financial and social resources, showing that health inequity exists even when Hong Kong has a large public health-care sector.

5.1 | Beyond income-poverty—The effect of deprivation

A novelty to our study was that we followed Townsend's theory on poverty and conceptualized income-poverty and deprivation as two interrelated yet distinct indicators of social disadvantages in society (Townsend, 1962). We found that income-poverty and deprivation independently affected the access to regular source of primary care and the type of sector the doctor belonged to. Looking at the intersectionality of our sample's characteristics, 6.4% of our subjects were both income-poor and deprived, and 17.7% were either income-poor or deprived. These are all consistent with conclusion drawn in the previous study by Saunders et al. (2014) that the overlap between income-poverty

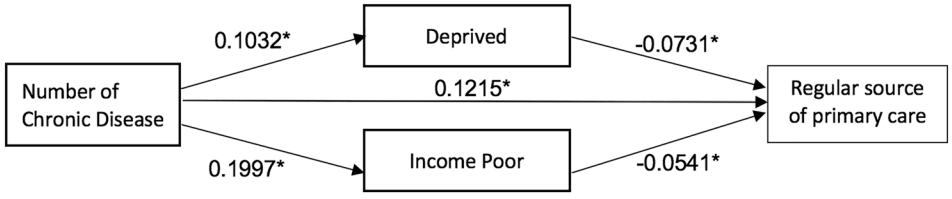


FIGURE 2 Path analysis for association between number of chronic disease and regular source of primary care (direct effect), and via income poverty and deprivation (indirect effect; n = 2,009).
Notes: Coefficients within paths are standardized, adjusted for age, gender, marital status, education level, and occupation; *p value < .05. Total indirect effect = −0.0184 (p value = .0016)

and deprivation is relatively low. In other words, income can only indirectly proxy the material and social activities that their income can be spent on, whereas deprivation is more direct in measuring the material and social deprivation circumstances.

The relatively younger age and higher proportion of employment observed among the deprived non-income-poor in our study showed that even those who were actively working could still be deprived. This group also had a lower proportion of receiving social security according to our data as they might have failed the income-asset-based means test of Comprehensive Social Security Assistance. Affordability, as reflected in the construction of deprivation, is a substantial determining factor in health-seeking behaviors. Even minimal copayments could deter potential patients from seeking health service—A copayment as low as US$8 can deter patients from using screening services in Hong Kong (Lian et al., 2013). Therefore, the inclusion of deprivation in measuring the multidimensional poverty in addition to income-poverty gives a fuller picture of the association of social disadvantage and primary care utilization and helps targeting policy efforts.

5.2 | A structural determinant of health-care inequity in a mixed public–private health-care system

In our study, 68.6% of those who had regular source of primary care received it in the private sector, and the rest in the public sector. Those who sought regular primary care in the public sector were prone to be older, less educated, less skilled, more income-poor, more deprived, and more multimorbid. Adjusting for other socio-demographic variables, dose–response relationships were found for the number of chronic diseases being significantly associated with a lower chance of having regular source of primary care in the private sector. This may be a reflection of the problem of unaffordability of services in the private sector and is consistent with previous studies that found that residents with long-term chronic illnesses tended to receive disease management services in the public sector due to cost concerns (Lee et al., 2010). Repeated visits in the private sector mean heavier financial burden to bear in the long run.

The quality of primary care differs between the public and private sectors. Private providers often offer better access during off-work hours, compared with a fixed number of available appointments in the public sector, which are only available during the regular work hours and are often booked up within the first hour every day (LCQ12: General out-patient clinics telephone appointment service, n.d.). Private providers are also available at many more convenient locations than the public ones. Further, whereas the public sector assigns a doctor from the team on duty at each of the patient's visits (Wong et al., 2010; Wong et al., 2017), in the private sector, patients can pick and choose their own service providers on the basis of specific health needs, availability of services when in need, and cost. Residents are used to using a combination of services from both sectors to meet a wide range of health needs; however, such set-up does not facilitate quality regular source of care, and it contributes to the findings of a cross-national comparative study, which showed that Hong Kong had the lowest rate of regular source of care for older persons and the highest rate of cost-related accessibility problems in the past year when compared with Australia, Canada, France, Germany, the Netherlands, New Zealand, Norway, Sweden, Switzerland, the United Kingdom, and the United States (Wong et al., 2017). Taken together, poorer people in Hong Kong are discouraged from seeking regular primary care from the private sector due to financial constraints and also face difficulty in receiving regular primary care in the public sector due to logistical and systemic reasons. Our findings implied that this mixed public–private health-care system helped contribute to the health inequality in terms of primary care in Hong Kong.

5.3 | Public health and policy implications—The way forward

Effective policy responses to address issues of health service inequality should begin with studying the overall pattern of access to services across the whole social gradient. The World Health Organization (WHO) described four patterns in its Handbook of Health Inequality Monitoring (WHO, 2013). Between “Universal Coverage” and “Mass Deprivation” lie the two other patterns: “Marginal Exclusion” describes the situation where inaccessibility to health-

care services clusters among those who are poor and "queueing" where an almost linear gradient of equal increases in coverage across wealth. The patterns of association observed in our research between household income deciles/deprivation and access to regular primary care fall somewhere between "marginal exclusion" and "queuing" (Figure 1). One possible policy focus in response to a "marginal exclusion" pattern is expanding provision of services to particular groups that are marginalized or excluded, whereas the "queuing" pattern requires an approach that combines population-wide and targeted interventions (Sadana, Blas, Budhwani, Koller, & Paraje, 2016). Therefore, for Hong Kong, considering the findings from the current study and other local research, we see two main directions for policy intervention efforts to address the health inequality issues regarding access to primary care services: they are (a) to promote access by strengthening the concept and practice of primary care in the wider population while increasing community resources to residents at affordable rates and (b) to narrow the social gaps in access to regular primary care.

When designing policy interventions to narrow the social gaps in access to regular primary care, it is important to recognize the multidimensionality of the socio-economic characteristics of its local population. Although income is a common yardstick for measuring poverty and eligibility for a broad range of social security programmes, our research has shown its limitation in the potential of identifying group of people in need because of its omission of the non-monetary aspect of poverty, which is better captured by the deprivation indicator in our study. By embracing a more comprehensive concept of poverty, policy interventions will be more accurately targeted and hence more effective.

In addition to designing policy interventions to promote access to primary care across the population and especially for the disadvantaged, it is important to also tackle the wider social determinants of health that contributed to the disparity observed. Although the health-care system in Hong Kong did not intentionally deny people adequate health care due to lack of means, it did however indirectly deny them adequate health care due to the barriers that are imposed to them by the societal structure and other social determinants of health inequities (Marmot, 2005). These social determinants do not only include the downstream determinants, such as the socio-economic position, health system, material circumstances, behavioral and biological factors, and psychosocial factors, but also the more upstream structural determinants of the socio-economic and political context (e.g., governance, policies, and cultural and societal values). In the case of Hong Kong, it is apparent from our study that those who are income-poor and deprived are more prone to having less access to regular source of primary care, and this cannot be understood independent of the larger socio-economic and political context, as mentioned above. More precisely, our findings questioned the adequacy of Hong Kong's current overarching policy that is based on a nonrefusal principle and challenged it to take on a more proactive role in targeting the social determinants of health to eliminate disparity for the betterment of overall population health.

5.4 | Limitations

Although the findings of this study add to the literature, there are caveats. First, our study is cross-sectional, so the associations can be interpreted as a case of reversed causality (i.e., having access to regular source of primary care may lead to greater number of chronic diseases and poverty). However, we think this is highly unlikely in this case, because there should not be any compelling reason that having regular source of primary care would affect anyone's income and social and material resources per se. It has been shown consistently that the effect of social determinants of health is much stronger than the health determinants of social status (WHO, 2017). Nevertheless, further follow-up studies would also help identify any longitudinal associations among medical conditions, poverty, and health outcomes. Second, survey questions were all self-reported; thus, the data were prone to recall bias. Nevertheless, there was no particular reason that these would happen in a systematic manner that might distort the findings. Third, there might be selection bias because the sampled subjects were recruited from households, and they tended to be female, older, less skilled, and more likely to be nonworking during office hours. To ensure better generalizability of our results, weighting based on the age and gender distributions of Hong Kong's general population was

applied. However, potential overrepresentation or underrepresentation of certain sampling areas might still exist because there was no single age population data by district available to conduct geographical weighting.

6 | CONCLUSION

To our knowledge, this is the first study that applied the concept of multidimensionality of poverty and examined whether and how the two operationalized indicators of poverty, income-poverty and deprivation, independently affect the access to regular source of primary care and disrupt the association between number of chronic diseases and access to regular source of primary care. Despite Hong Kong's health-care policy that no one shall be denied adequate health care due to lack of means in the public health-care sector, primary care is found to be pro-rich—income-poor and deprived people are less prone to having access to regular source of primary care, regardless of other socio-demographic factors and number of chronic diseases. The Hong Kong government should not be content with the current health-care policy and should proactively tackle the wider social determinants of health inequities that impose barriers to less advantaged people in accessing regular source of primary care, which has many benefits to health and health-care outcomes.

ACKNOWLEDGEMENT

The work was supported by a grant from the Central Policy Unit of the Government of the Hong Kong Special Administrative Region and the Research Grants Council of the Hong Kong Special Administrative Region, China (Project 4003-SPPR-11).

CONFLICT OF INTEREST

There are no competing interests to declare or any financial disclosure to make.

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REFERENCES

Census and Statistics Department. (2009). Thematic Household Survey Report No. 40: Socio-demographic profile, Health Status and Self-care Capability of Older Persons. Hong Kong SAR. Retrieved from https://www.censtatd.gov.hk/hkstat/sub/sp160.jsp?productCode=C0000071

Census and Statistics Department. (2017). Hong Kong Population Projection 2017–2066. Hong Kong SAR. Retrieved from https://www.statistics.gov.hk/pub/B1120015072017XXXXB0100.pdf

Chung, G. K.-K., Chung, R. Y.-N., Chan, D. C.-C., Lai, F. T.-T., Wong, H., Lau, M. K.-W., … Yeoh, E.-K. (2018). The independent role of deprivation in abdominal obesity beyond income poverty. A population-based household survey in Chinese adults. *Journal of Public Health*, fdy161. https://doi.org/10.1093/pubmed/fdy161

Chung, R. Y., Mercer, S. W., Yip, B. H. K., Chan, S. W. C., Lai, F. T. T., Wang, H. H. X., … Wong, S. Y. S. (2016). The association between types of regular primary care and hospitalization among people with and without multimorbidity: A household survey on 25,780 Chinese. *Scientific Reports*, *6*, 29758. https://doi.org/10.1038/srep29758

Chung, R. Y., Tin, K. Y., Cowling, B. J., Chan, K. P., Chan, W. M., Lo, S. V., & Leung, G. M. (2009). Long-term care cost drivers and expenditure projection to 2036 in Hong Kong. *BMC Health Services Research*, *9*(1), 172. https://doi.org/10.1186/1472-6963-9-172

Chung, R. Y., & Wong, S. Y. S. (2015). Health inequality in Hong Kong. *The China Review*, *15*(2), 91–118. Retrieved from. https://muse.jhu.edu/article/596266

Chung, R. Y.-N., Chung, G. K.-K., Gordon, D., Wong, S. Y.-S., Chan, D., Lau, M. K.-W., … Wong, H. (2018). Deprivation is associated with worse physical and mental health beyond income poverty: A population-based household survey among Chinese adults. *Quality of Life Research*, *27*(8), 2127–2135. https://doi.org/10.1007/s11136-018-1863-y

Clancy, C. M., & Stryer, D. B. (2001). Racial and ethnic disparities and primary care experience. *Health Services Research*, *36*(6 Pt 1), 979–986. Retrieved from. http://www.ncbi.nlm.nih.gov/pubmed/11775671

De Maeseneer, J. M., De Prins, L., Gosset, C., & Heyerick, J. (2003). Provider continuity in family medicine: Does it make a difference for total health care costs? *Annals of Family Medicine*, *1*(3), 144–148. Retrieved from. http://www.ncbi.nlm.nih.gov/pubmed/15043375

Einarsdóttir, K., Preen, D. B., Emery, J. D., Kelman, C., & Holman, C. D. J. (2010). Regular primary care lowers hospitalisation risk and mortality in seniors with chronic respiratory diseases. *Journal of General Internal Medicine*, *25*(8), 766–773. https://doi.org/10.1007/s11606-010-1361-6

Festenstein, M. (2005). *Negotiating diversity: Culture, deliberation, trust*. Cambridge: Polity Press.

Food and Health Bureau. (2010). My Health My Choice Health Reform Second Stage Consultation. Hong Kong SAR. Retrieved from https://www.myhealthmychoice.gov.hk/pdf/consultation_full_eng.pdf

Fung, C. S., Wong, C. K., Fong, D. Y., Lee, A., & Lam, C. L. (2015). Having a family doctor was associated with lower utilization of hospital-based health services. *BMC Health Services Research*, *15*(1), 42. https://doi.org/10.1186/s12913-015-0705-7

Gordon, D., Levitas, R., Pantazis, C., Patsios, D., Payne, S., Townsend, P., … Williams, J. (2000). *Poverty and social exclusion in Britain*. York: Joseph Rowntree Foundation.

Gordon, D., & Townsend, P. (1990). Measuring the poverty line. *Radical Statistics*, *47*, 5–12. Retrieved from. https://www.researchgate.net/publication/240112405_Measuring_the_Poverty_Line

Gray, D. P., Evans, P., Sweeney, K., Lings, P., Seamark, D., Seamark, C., … Bradley, N. (2003). Towards a theory of continuity of care. *Journal of the Royal Society of Medicine*, *96*(4), 160–166. Retrieved from. http://www.ncbi.nlm.nih.gov/pubmed/12668701, https://doi.org/10.1177/014107680309600402

Harris, M., Harris, E., & Roland, M. (2004). Access to primary health care: Three challenges to equity. *Australian Journal of Primary Health*, *10*(3), 21. https://doi.org/10.1071/PY04043

Hart, J. T. (1971). The inverse care law. *Lancet (London, England)*, *1*(7696), 405–412. Retrieved from. http://www.ncbi.nlm.nih.gov/pubmed/4100731

Health Care Voucher—Background of Elderly Health Care Voucher Scheme. (2018). Retrieved December 19, 2018, from https://www.hcv.gov.hk/eng/pub_background.htm

Hill, A., Griffiths, S., & Gillam, S. (2007). *Public health and primary care*. Oxford University Press. https://doi.org/10.1093/acprof:oso/9780198508533.001.0001

Hooper, C.-A., Gorin, S., Cabral, C., Dyson, C., & Frank Buttle Trust (2007). *Living with hardship 24/7: The diverse experiences of families in poverty in England*. The Frank Buttle Trust.

Horgan, G. (2007). *The impact of poverty on young children's experience of school*. York: Joseph Rowntree Foundation.

Kempson, E. (1996). *Life on a low income*. York: Joseph Rowntree Foundation.

Lai, T. Y. Y., & Leung, G. M. (2010). Equity and efficiency in healthcare: Are they mutually exclusive? *HKJOphthalmol*, *16*(1). Retrieved from). http://www.cohk.org.hk/download/HKJO-V16N1-p2-Editorial.pdf

Lam, T. P. (2001). Strengths and weaknesses of traditional Chinese medicine and Western medicine in the eyes of some Hong Kong Chinese. *Journal of Epidemiology and Community Health*, *55*(10), 762–765. https://doi.org/10.1136/JECH.55.10.762

Lam, T. P., Wun, Y. T., Lam, K. F., & Sun, K. S. (2015). Differences in antibiotic use between patients with and without a regular doctor in Hong Kong. *BMC Pharmacology and Toxicology*, *16*(1), 40. https://doi.org/10.1186/s40360-015-0041-x

LCQ12: General out-patient clinics telephone appointment service. (n.d.). Retrieved January 11, 2019, from https://www.info.gov.hk/gia/general/201604/20/P201604200731.htm

Lee, A., Siu, S., Lam, A., Tsang, C., Kung, K., & Li, P. K. T. (2010). The concepts of family doctor and factors affecting choice of family doctors among Hong Kong people. *Hong Kong Medical Journal = Xianggang Yi Xue Za Zhi*, *16*(2), 106–115. Retrieved from. http://www.ncbi.nlm.nih.gov/pubmed/20354244

Leung, G. M., & Bacon-Shone, J. (2006). *Hong Kong's health system: Reflections, perspectives, and visions*. Hong Kong University Press. Retrieved from. https://books.google.com.hk/books/about/Hong_Kong_s_Health_System.html?id=R0Vw8fZQznIC&redir_esc=y

Lian, J. X., McGhee, S. M., Gangwani, R. A., Hedley, A. J., Lam, C. L. K., Yap, M. K. H., … Wong, D. S. H. (2013). Screening for diabetic retinopathy with or without a copayment in a randomized controlled trial: Influence of the inverse care law. *Ophthalmology*, *120*(6), 1247–1253. https://doi.org/10.1016/j.ophtha.2012.11.024

Macinko, J., Starfield, B., & Shi, L. (2003). The contribution of primary care systems to health outcomes within Organization for Economic Cooperation and Development (OECD) countries, 1970–1998. *Health Services Research*, *38*, 831–865. https://doi.org/10.1111/1475-6773.00149

Mack, J., & Lansley, S. (1985). *Poor Britain*. London: Allen and Unwin.

Marmot, M. (2005). Social deminants of health inequalities. *Lancet*, *365*, 1099–1104. Retrieved from. www.thelancet.com, https://doi.org/10.1016/S0140-6736(05)74234-3

McGuire, L. C., Ford, E. S., & Ajani, U. A. (2006). The impact of cognitive functioning on mortality and the development of functional disability in older adults with diabetes: The second longitudinal study on aging. *BMC Geriatrics*, *6*. https://doi.org/10.1186/1471-2318-6-8

Meyer, S. B., Luong, T. C., Mamerow, L., & Ward, P. R. (2013). Inequities in access to healthcare: Analysis of national survey data across six Asia-Pacific countries. *BMC Health Services Research*, *13*(1), 1. https://doi.org/10.1186/1472-6963-13-238

Organization for Economic Cooperation and Development. (2012). Quality review of the OECD database on household incomes and poverty and the OECD earnings database part I.

Owolabi, O., Zhang, Z., Wei, X., Yang, N., Li, H., Wong, S. Y., … Griffiths, S. M. (2013). Patients' socioeconomic status and their evaluations of primary care in Hong Kong. *BMC Health Services Research*, *13*(1), 487. https://doi.org/10.1186/1472-6963-13-487

Piachaud, D. (1981). Peter Townsend and the Holy Grail. *New Society*, *57*(10), 419–421.

Piccardi, C., Detollenaere, J., van den Bussche, P., & Willems, S. (2018). Social disparities in patient safety in primary care: A systematic review. *International Journal for Equity in Health*, *17*(1), 114. https://doi.org/10.1186/S12939-018-0828-7

Sadana, R., Blas, E., Budhwani, S., Koller, T., & Paraje, G. (2016). Healthy ageing: Raising awareness of inequalities, determinants, and what could be done to improve health equity. *The Gerontologist*, *56*(Suppl 2), S178–S193. https://doi.org/10.1093/geront/gnw034

Saunders, P., Wong, H., & Wong, W. P. (2014). Deprivation and poverty in Hong Kong. *Social Policy and Administration*, *48*(5), 556–575. https://doi.org/10.1111/spol.12042

Shi, L., & Starfield, B. (2000). Primary care, income inequality, and self-rated health in the United States: A mixed-level analysis. *International Journal of Health Services*, *30*(3), 541–555. https://doi.org/10.2190/N4M8-303M-72UA-P1K1

Starfield, B. (1998). *Primary care: Balancing health needs, services, and technology*. New York: Oxford University Press.

Starfield, B., Shi, L., & Macinko, J. (2005). Contribution of primary care to health systems and health. *The Milbank Quaterly*, *83*, 457–502. https://doi.org/10.1111/j.1468-0009.2005.00409.x

Sutton, L., Smith, N., Dearden, C., & Middleton, S. (2007). *A child's-eye view of social difference*. York: Joseph Rowntree Foundation.

The Hong Kong Medical Association. (2014). Report of Doctors' Fees Survey 2014. Hong Kong SAR. Retrieved from http://www.hkma.org/english/newsroom/news/201408Report_full.pdf

Tin, K. Y., Song, W., Tsoi, P. K., Lee, Y. H., Chong, D. S., Lam, D. W., … Maw, C. K. (2016). Hong Kong domestic health spending: Financial years 1989/90 to 2012/13. *Hong Kong Medical Journal*, *22*(3 Suppl 3), 1–24. Retrieved from. http://www.ncbi.nlm.nih.gov/pubmed/27389870

Tomlinson, M. (2003). Lifestyle and social class. *European Sociological Review*, *19*(1), 97–111. https://doi.org/10.1093/esr/19.1.97

Townsend, P. (1962). The meaning of poverty. *The British Journal of Sociology*, *13*(3), 210. https://doi.org/10.2307/587266

Townsend, P. (1987). Deprivation. *Journal of Social Policy*, *16*(2), 125–146. https://doi.org/10.1017/S0047279400020341

Warde, A., & Tomlinson, M. (1995). Taste among the middle classes,1968–1988. In T. Butler, & M. Savage (Eds.), *Social change and the middle classes* (p. 388). London: UCL Press.

Wolinsky, F. D., Bentler, S. E., Liu, L., Geweke, J. F., Cook, E. A., Obrizan, M., … Wallace, R. B. (2010). Continuity of care with a primary care physician and mortality in older adults. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, *65A*(4), 421–428. https://doi.org/10.1093/gerona/glp188

Wong, S. Y., Chung, R. Y., Chan, D., Li, J., Mak, D., Lau, M., … Wong, H. (2018). Financial barriers to medical care are more common among the poor, the sick and the more disabled in a special administrative region of China. 2017 (Submitted). *PLoS ONE*, *13*(11), 1–15. https://doi.org/10.1371/journal.pone.0205794

Wong, S. Y. S., Zou, D., Chung, R. Y., Sit, R. W., Zhang, D., Chan, D., … Woo, J. W. (2017). Regular source of care for the elderly: A cross-national comparative study of Hong Kong with 11 developed countries. *Journal of the American Medical Directors Association*, *18*(9), 807.e1–807.e8. https://doi.org/10.1016/j.jamda.2017.05.009

Wong, Y. S., Kung, K., Griffiths, S. M., Carthy, T., Wong, M. C., Lo, S. V., … Starfield, B. (2010). Comparison of primary care experiences among adults in general outpatient clinics and private general practice clinics in Hong Kong. *BMC Public Health*, *10*. https://doi.org/10.1109/WAINA.2011.92

World Health Organization (2013). *Handbook on health inequality monitoring with a special focus on low- and middle-income countries*. Geneva: World Health Organization. Retrieved from. https://www.who.int/gho/health_equity/handbook/en/

World Health Organization (2017). *Commission on social determinants of health—Final report*. WHO. World Health Organization. Retrieved from. https://www.who.int/social_determinants/thecommission/finalreport/en/

World Health Organization & International Conference on Primary Health Care (1978: Alma Ata, U) (1988). *From Alma Ata to the year 2000: Reflections at the midpoint*. Geneva: World Health Organization. Retrieved from. http://www.who.int/iris/handle/10665/39323

Yam, H.-K., Mercer, S. W., Wong, L.-Y., Chan, W.-K., & Yeoh, E.-K. (2009). Public and private healthcare services utilization by non-institutional elderly in Hong Kong: Is the inverse care law operating? *Health Policy*, *91*(3), 229–238. https://doi.org/10.1016/j.healthpol.2008.12.012

How to cite this article: Chung RY-N, Chan D, Chau NN-S, Huang S, Wong H, Wong SY-S. Poverty affects access to regular source of primary care among the general population in Hong Kong. *Soc Policy Admin*. 2019; 53:854–871. https://doi.org/10.1111/spol.12538