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BMJ Open Outpatient use patterns and experiences among diabetic and hypertensive patients in fragile settings: a cross-sectional study from Lebanon

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ABSTRACT

Objectives Assess and describe the health service use and delivery patterns for non-communicable disease (NCD) services in two contrasting fragility contexts and by other principal equity-related characteristics including gender, nationality and health coverage.

Setting Primary healthcare centres located in the urbanised area of Greater Beirut and the rural area of the Beqaa Valley.

Design This is a cross-sectional study using a structured survey tool between January and September 2020.

Participants 1700 Lebanese and Syrian refugee patients seeking primary care for hypertension and diabetes.

Primary and secondary outcomes The main outcome is the comprehensiveness of service delivery comparing differences in use and service delivery patterns by fragility setting, gender, nationality and health coverage.

Results Compliance with routine NCD care management (eg, counselling, immunisations, diagnostic testing and referral rates) was significantly better in Beirut compared with Beqaa. Women were significantly less likely to be offered lifestyle counselling advice and referral to cardiologists (58.4% vs 68.3% in Beqaa and 58.1% vs 62% in Beirut) and ophthalmologists, compared with men. Across both settings, there was a significant trend for Lebanese patients to receive more services and more advice related to nutrition and diabetes management (89.8% vs 85.2% and 62.4% vs 55.5%, respectively). Similarly, referral rates were higher among Lebanese refugees compared with Syrian refugees. Immunisation and diagnostic testing were significantly higher in Beirut among those who have health coverage compared with Beqaa.

Conclusions The study discovered significant differences in outpatient service use by setting, nationality and gender to differentials. A rigorous and comprehensive appraisal of NCD programmes and services is imperative for providing policy makers with evidence-based recommendations to guide the design, implementation and evaluation of targeted programmes and services necessary to ensure equity in health services delivery to diabetic and hypertensive patients. Such programmes are an ethical imperative considering the protracted crises and compounded fragility.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ The first study of its kind to examine outpatient use patterns and experiences among patients in two contrasting fragility settings in Lebanon.
- ⇒ The large sample size of the study (1700) and the inclusion of a large number of refugees from Syria.
- ⇒ Sampling included only patients visiting healthcare centres, which may result in a selection bias.
- ⇒ The study did not measure the impact of economic crises nor did it account for the impact of the COVID-19 pandemic in Lebanon.

BACKGROUND

Non-communicable diseases (NCDs), including cardiovascular disease, diabetes, cancer, chronic respiratory diseases and mental health disorders, are the leading cause of global mortality, contributing to 41 million (71%) of all deaths annually in 2018.¹ NCDs disproportionately affect people in low-income and middle-income countries, where 78% of all NCD deaths and 85% of premature deaths occur.² The rising burden of NCDs exacerbates health inequalities and worsens poverty, especially in fragile contexts marked by weak health systems and poor governance.³

Fragility is a multidimensional phenomenon encompassing political, security, environmental, economic and social risks and inadequate coping capacity by the state, system or community to manage, absorb or mitigate these risks.⁴ Fragility therefore leaves populations vulnerable to a range of threats. The 2020 Organisation for Economic Co-operation and Development (OECD) State of Fragility Report notes that in fragile contexts, which are home to over 2 billion people, 460 million (76.5%) live in extreme poverty and lack access to essential services.⁴

Lebanon is a small country on the Eastern Mediterranean, with a population of 6 million people,⁵ including displaced populations from Syria and Palestine. Over the last few decades, Lebanon has experienced severe fragility-related risks, including regional and national conflicts and protracted internal strife. As a consequence, the country had several episodes of economic downturns with economic growth sharply declining in recent years.^{5,6} The protracted crisis in Syria had further exacerbated the impact of fragility on the Lebanese health system with a huge influx of Syrian refugees into Lebanon since 2011, peaking at around one-third of its residents.⁷ As a consequence, Lebanon has been experiencing a growing burden of NCDs, exacerbated by high levels of fragility.⁸ In 2018, NCDs accounted for 91% of all deaths in the country, with hypertension and diabetes being the most prevalent NCDs.²

Healthcare in Lebanon is highly fragmented and provided predominantly by the private sector.⁹ The long years of civil war and political conflict have taken its toll on the financial capacities of the public healthcare system¹⁰ and have led to inequitable concentration of specialised health services in highly urbanised areas (eg, Greater Beirut) as compared with poorly resourced rural areas such as the Beqaa (a fertile valley in eastern Lebanon).² Although the country runs six social insurance funds, close to half the population have no formal health coverage,¹¹ and out-of-pocket household expenditures remains a main contributor to health financing.¹² In 2015, in order to strengthen primary care delivery and respond to the increasing NCD burden in the country, the Ministry of Public Health (MoPH), in collaboration with the World Bank, launched the Emergency Primary Healthcare Restoration Project (EPHRP), which aimed to provide free healthcare services to 150 000 citizens identified

as living below the poverty line by the National Poverty Targeting Programme.¹³ The programme offers six types of health packages¹³ and prioritises NCD services for diabetes mellitus and hypertension. These packages support access to immunisations, follow-up diagnostic tests, consultations (including pertinent counselling and health education) and medication prescriptions. By 2018, the project had delivered services to 101 454 beneficiaries, of whom 61 887 were adults.¹⁴

A recent study from Lebanon on health service use among patients seeking care for diabetes and hypertension among the Lebanese host community members and Syrian refugees identified significant gaps in care-seeking behaviour and reported that host community members had better access to care and fewer reports of medication interruption compared with refugees.¹⁵ Lack of health coverage and affordability was found to be a significant barrier, with 39% of Syrian refugees in Lebanon reporting not receiving needed care due to unaffordable treatment and medication costs.^{16–18} Lebanese and Syrian community members further identified several barriers to health seeking, including limited availability of services and perceptions of poor-quality care.⁷

Given the fragility of Lebanon overall and the need to address the rising NCD burden among both Lebanese host communities and Syrian refugees in particular, this study aimed to examine the equitable delivery of services in the context of fragility. Specifically, it assesses and describes the outpatient health service use patterns for NCD services in two contrasting fragility contexts: the Greater Beirut and the Beqaa Valley (figure 1)^{19–22} and by other principal equity-related characteristics including gender, nationality and health coverage.

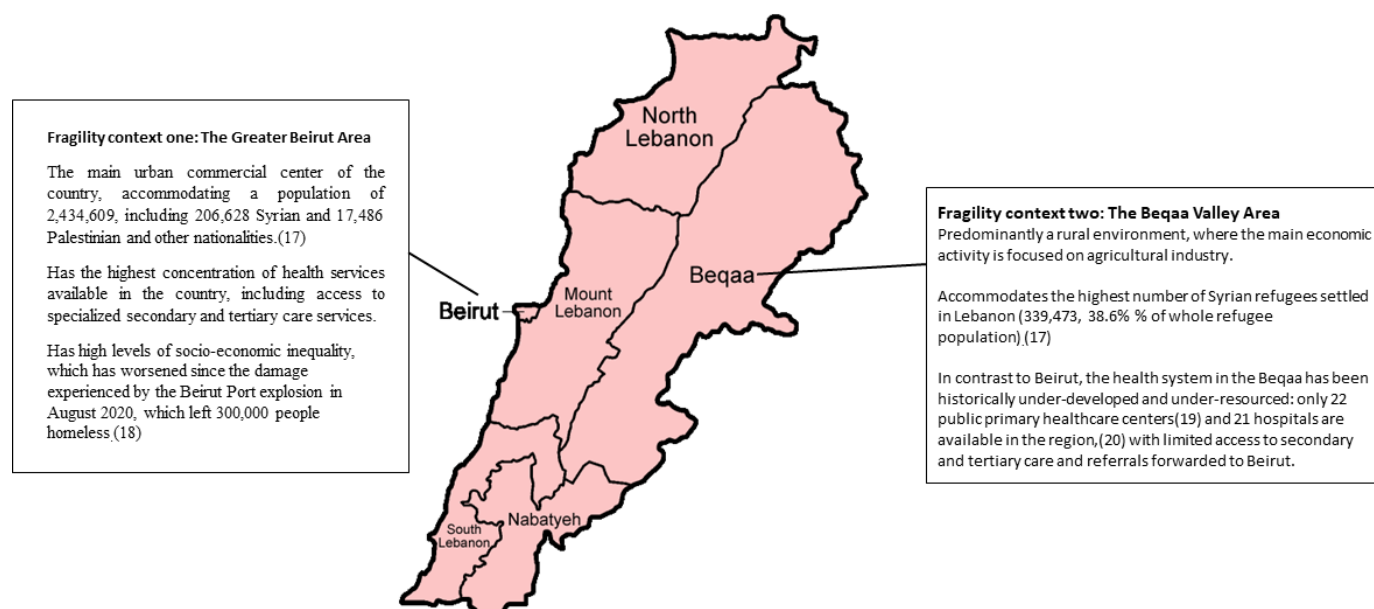


Figure 1 Background information on the two fragility contexts of this study.

Research in context

Evidence before this study

This study comprised two phases. In the first phase, literature review was conducted in order to synthesise the extant literature and identify the gaps in knowledge and to provide a theoretical foundation for the proposed study. The search was done using PubMed engine using different combinations of keywords that include non-communicable diseases; Lebanon; fragile context; public health; health systems, in addition to electronic journals and websites. This was followed by semi-structured interviews and group model building, which helped identify the need for health promotion and primary prevention activities and priority interventions in the study areas.

Added value of this study

Non-communicable diseases (NCDs) are considerably increasing in Lebanon. Since Lebanon is swamped by its already socioeconomic and financial crisis and underdeveloped health systems, it is inevitable to investigate the equity in delivering healthcare services among its population. Our study explores these differences between two contrasting settings in Lebanon. Our results showed that NCD management and healthcare services are higher in Beirut compared with the Beqaa region and are more delivered to Lebanese refugees than to Syrian refugees.

Implications of all the available evidence

The findings of our paper will guide healthcare policy makers in Lebanon to establish a well-designed and targeted programme to achieve equity between health services delivery to diabetic and hypertensive patients.

METHODS

Study design and setting

This is a cross-sectional study using a quantitative survey design, conducted between January and September 2020 in two contrasting regions of Lebanon: the urbanised area of Greater Beirut (fragility setting 1) and the Beqaa Valley (fragility setting 2) (see [figure 1](#)). Note that the unit of analysis in this study was the patient, and the sampling unit was the health centre.

Data collection

In preparation for data collection, the study used a team of eight data collectors who attended a 2-day training which included an overview of the study and its objectives, the recruitment process, and research ethics and proper surveying practices. Data collection was performed by filling electronic spreadsheets using KoBo, a toolkit for collecting and managing data in challenging environments.²³ Data collectors approached participants in the reception room while they were waiting for their appointment. Participants who were interested to participate and met the inclusion criteria were invited to fill out the questionnaire.

Participants

Targeted health facilities were those highly accessed by disadvantaged Lebanese and Syrian populations that offered diabetes and hypertension services. Overall, 14 facilities were approached, out of which 11 agreed to participate in the study. At these facilities, targeted

participants were Syrian or Lebanese individuals who were (1) older than 40 years and (2) diagnosed with diabetes or hypertension (based on personal self-report following a confirmed diagnosis). Anyone not meeting the aforementioned criteria or not consenting to participate was excluded.

Sample size

We based sample size calculations on an index of services to be provided in line with the NCD service delivery package supported by the EPHRP (see online supplemental appendix 1). Assuming an average 90/100 and 85/100 score on this index per population group (Lebanese and Syrian, respectively) and per setting (Beirut or Beqaa), and 80% power and 5% error, a total of 1800 persons would need to be recruited. Overall, we recruited 1700, 94.4% of the intended sample size.

Data sources

All eligible patients consenting to participate were surveyed using a standardised tool which comprises 12 questions on demographics, 11 on disease risk factors, 26 on itemised accounts of services received at accessed a primary healthcare centre (PHCC) or via referral, 10 on disease outcomes, 13 on perceptions of patient satisfaction with services and also patient self-management, and 2 on general access and affordability of NCD services and care coverage (complete tool in online supplemental appendix 2). In the development of the study tool, we have drawn on the World Health Surveys,²⁴ the Patient Satisfaction questionnaire of the Royal College of General Practitioners,²⁵ 'The National Survey of People with Diabetes'²⁶ and the WHO individual questionnaire.²⁷ The questions on service delivery match those outlined in the service packages designed/outlined by the Lebanese MoPH at the primary healthcare level, specifically for diabetes and hypertension care.

Statistical methods and main variables

The main outcome of the study is the comprehensiveness of service delivery, with a view to understand differences in delivery patterns by fragility setting and equity-related characteristics, including gender, nationality and health coverage. We report on bivariate analyses examining differences in services delivered by patient category and fragility setting, specifically focusing on individual service items for each category: routine check-up items (eg, weight and blood pressure (BP) monitoring), lifestyle advice received (eg, nutrition), immunisations and diagnostic tests received, and referrals recommended and accessed. The results represent the subjective responses of patients with no additional data retrieved from their service providers or medical files. To understand whether all of these services are equitably delivered, we further examined patterns by patient group (distinguishing between diabetic, hypertensive and comorbid patients) and conducted bivariate analyses by gender, nationality

and by health coverage status, comparing service delivery between the two fragility contexts.

Data were imported and analysed using SPSS V.27. Means and SDs were used to summarise numerical data after checking for normal distribution, whereas frequency and percentages were used for categorical data. Bivariate analyses were carried out using the independent t-test when comparing means between two groups, and the Pearson χ^2 when comparing differences in proportions. The significance level was set at $p < 0.05$.

Role of the funding source

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RESULTS

A total of 1700 patients were recruited, 458 with diabetes (26.94%), 908 with hypertension (53.41%) and 334 with comorbid conditions of hypertension and diabetes (19.64%). The average response rate was 87% for Greater Beirut (fragility setting 1) and 97% for Beqaa Valley (fragility setting 2).

Demographic characteristics

Patients in setting 2 were on average younger compared with those in setting 1 (55.90 (SD=10.11) vs 60.04 (SD=10.09)). Two-thirds of the patients were women, regardless of the fragility setting and disease status. A significantly higher proportion of patients in setting 1 were Lebanese (76.3%), while in setting 2, the majority were Syrians (64.6%) ($p < 0.05$). Most patients (85.2%) in setting 2 had minimal education (none or just primary), and the proportion of employed patients was significantly lower in setting 2. A higher percentage of patients living in a crowded household was reported in setting 2, as compared with setting 1 (52.8% vs 41.3%). Overall, 81.6% of presenting patients were overweight or obese and 31.88% were smokers, with 1.52% reporting consumption of alcohol (table 1).

Health services delivered by setting and health condition

The most consistently offered check-up items were BP monitoring (for 91.2% of patients) and nutritional advice (for 78.23%). Assessment of weight was carried out less frequently in setting 1 versus setting 2 (for 60% vs 77.4% of patients). Height was measured more frequently among patients in setting 1 (58.3% vs 39.7%), while BP was measured more among patients in setting 2 (94.5% vs 81.8%) for the hypertensive and diabetic patients only. Foot examinations were provided for less than 10% of hypertensive patients in both settings; rates, however,

were higher in setting 1 for both diabetic (22.8% vs 9.4%) and comorbid (21.1% vs 14.8%) patients (table 2).

Diabetic and comorbid patients received more nutrition (95.2% and 95.2% vs 77.6% and 81.8%) and exercise advice (68.9% and 75.9% vs 56.9% and 62.2%) in setting 2 compared with those in setting 1. However, patients reported receiving smoking and alcohol advice more frequently in setting 1 compared with setting 2 (50.6% vs 42.8% and 16.7% vs 6.6%, respectively; table 2). Compared with setting 2, a significantly higher proportion of patients in setting 1 received hepatitis B (37.4% vs 2.2%) and influenza (12.6% vs 2.2%) vaccines. Diagnostic testing rates were generally high, with fasting blood sugar, haemoglobin A1c and lipid profiles each secured for over 65% of patients, although rates for all tests were significantly higher in facilities in setting 1 compared with setting 2. Overall, rates of referrals were significantly higher in setting 1 compared with setting 2 (table 2).

Health services by gender

When comparing the proportion of services delivered by gender, we observe the following patterns: women were significantly less likely to be offered lifestyle advice regarding nutrition, smoking and exercise compared with men (7.76, 12% and 8.7% vs 31.4, 66.2% and 57.9%, respectively), especially in facilities in setting 2. Women visiting facilities in setting 2 were less likely to be offered diagnostic tests (eg, lipid tests, uric acid, creatinine and electrocardiography) compared with men. Compared with women, men were more likely to be referred to cardiologists (68.3% vs 58.4% in setting 2 and 62% vs 58.1% in setting 1) and ophthalmologists (21.6% vs 12.6% in setting 2) (table 3). No consistent differences were observed in sex differences across the two settings.

Health services by nationality

When comparing service delivery between Lebanese and Syrian patients, we observed that Lebanese patients received significantly more advice on nutrition and diabetes management compared with Syrians (89.8% vs 85.2% and 62.4% vs 55.5%, respectively). In terms of diagnostic testing, across both settings, there was a trend for Syrians to receive fewer services than Lebanese (except for the complete blood count test), although this was more pronounced in facilities in setting 2. This trend was particularly marked for EKG, SGPT and SGOT. Compared with Syrians, Lebanese patients were more likely to be referred to endocrinologists (30.1% vs 17.2% in setting 1 and 26.5% vs 21.8% in setting 2) and ophthalmologists (25.7% vs 15.6% in setting 1 and 23.5% vs 11.2% in setting 2).

However, setting specific differences are notable. For example, a significantly higher proportion of Lebanese patients residing in setting 1 had height and foot examination check-ups (58.4% and 15.7%) compared with those in setting 2 (39.5% and 11.6%), while those in setting 2 had more weight and BP checkups (76.9% vs 59.6% and 93.6% vs 83.3%, respectively); the results

Table 1 Participant characteristics by fragility settings in Lebanon, 2020

	Diabetic (n=458)		Hypertensive (n=908)		Comorbid (n=334)		All patients (N=1700)	
	Fragility setting 1 N (%)	Fragility setting 2 N (%)	Fragility setting 1 N (%)	Fragility setting 2 N (%)	Fragility setting 1 N (%)	Fragility setting 2 N (%)	Fragility setting 1 N (%)	Fragility setting 2 N (%)
Age (mean±SD)	58.1±10.01	54.88±9.62*	60.4±10.70	55.61±10.45*	60.81±9.39	58.69±9.23	60.04±10.09	55.90±10.11*
Gender								
Female	41 (68.3)	249 (62.6)	76 (69.7)	561 (70.2)	70 (69.3)	147 (63.1)	187 (69.3)	957 (66.9)
Male	19 (31.7)	149 (37.4)	33 (30.3)	238 (29.8)	31 (30.7)	86 (36.9)	83 (30.7)	473 (33.1)
Nationality								
Lebanese	42 (70.0)	155 (38.9)*	86 (78.9)	246 (30.8)*	78 (77.2)	105 (45.1)*	206 (76.3)	506 (35.4)*
Syrian	18 (30.0)	243 (61.1)	23 (21.1)	553 (69.2)	23 (22.8)	128 (54.9)	64 (23.7)	924 (64.6)
Marital status								
Single	2 (3.3)	12 (3.0)	8 (7.3)	21 (2.6)*	7 (7.0)	6 (2.6)	17 (6.3)	39 (2.7)*
Married	52 (86.7)	325 (81.7)	90 (82.6)	661 (82.7)	78 (78.0)	181 (77.7)	220 (81.8)	1167 (81.6)
Divorced/widowed	6 (10.0)	61 (15.3)	11 (10.1)	117 (14.6)	15 (15.0)	46 (19.7)	32 (11.9)	224 (15.7)
Educational level								
No school/primary	30 (50.0)	323 (81.4)*	59 (54.1)	690 (86.4)*	67 (67.0)	204 (87.6)*	156 (58.0)	1217 (85.2)*
Secondary/high school	26 (43.3)	69 (17.4)	38 (34.9)	96 (12.0)	28 (28.0)	21 (9.0)	92 (34.2)	186 (13.0)
University/graduate studies	4 (6.7)	5 (1.3)	12 (11.0)	13 (1.6)	5 (5.0)	8 (3.4)	21 (7.8)	26 (1.8)
Employment status								
Working	15 (25.0)	68 (17.1)	25 (22.9)	102 (12.8)*	16 (16.0)	21 (9.0)*	56 (20.8)	191 (13.4)*
Not working	44 (73.3)	310 (77.9)	83 (76.1)	648 (81.1)	82 (82.0)	180 (77.3)	209 (77.7)	1138 (79.6)
Unable to work	1 (1.7)	20 (5.0)	1 (0.9)	49 (6.1)	2 (2.0)	32 (13.7)	4 (1.5) ^a	101 (7.1)
Crowding index†								
<1	11 (18.6)	42 (12.1)	23 (21.7)	81 (13.4)*	16 (16.2)	24 (12.6)	50 (18.9)	147 (12.9)*
1–2	25 (42.4)	123 (35.3)	25 (42.5)	194 (32.1)	35 (35.4)	75 (39.5)	105 (39.8)	392 (34.3)
>2	23 (39.0)	183 (52.6)	38 (35.8)	329 (54.5)	48 (48.5)	91 (47.9)	109 (41.3)	603 (52.8)
BMI								
Underweight	0 (0.0)	0 (0.0)	1 (1.0)	4 (0.5)	4 (4.8)	0 (0.0)*	5 (2.1)	4 (0.3)*
Normal	14 (25.0)	65 (17.5)	22 (22.9)	117 (15.6)	11 (13.1)	39 (18.8)	47 (19.9)	221 (16.7)
Overweight	20 (35.7)	160 (43.1)	42 (43.8)	302 (40.4)	32 (38.1)	80 (38.5)	94 (39.8)	542 (40.8)
Obese	22 (39.3)	146 (39.4)	31 (32.3)	325 (43.4)	37 (44.0)	89 (42.8)	90 (38.1)	560 (42.4)
Smoking status								
Yes, daily	21 (35.0)	111 (27.9)*	43 (39.4)	179 (22.5)*	33 (32.7)	67 (28.8)*	97 (35.9)	357 (25.0)*

Continued



Table 1 Continued

	Diabetic (n=458)		Hypertensive (n=908)		Comorbid (n=334)		All patients (N=1700)	
	Fragility setting 1 N (%)	Fragility setting 2 N (%)	Fragility setting 1 N (%)	Fragility setting 2 N (%)	Fragility setting 1 N (%)	Fragility setting 2 N (%)	Fragility setting 1 N (%)	Fragility setting 2 N (%)
Yes, but not daily	8 (13.3)	14 (3.5)	5 (4.6)	38 (4.8)	13 (12.9)	10 (4.3)	26 (9.6)	62 (4.3)
No	31 (51.7)	273 (68.6)	61 (56.0)	580 (72.8)	55 (54.5)	156 (67.0)	147 (54.4)	1009 (70.7)
Alcohol (yes)	4 (6.7)	0 (0.0)*	10 (9.2)	4 (0.5)*	5 (5.0)	3 (1.3)*	19 (7.1)	7 (0.5)*

*P<0.05.
†Crowding index is the number of people per room.
BMI, body mass index.

showed a similar pattern for Syrians. Similarly, a higher proportion of Lebanese and Syrian patients residing in setting 1 received hepatitis B and influenza vaccines compared with those in setting 2.

Health services by health coverage status

In terms of setting specific differences by health coverage status, there was a higher proportion of covered patients residing in setting 2, and, compared with those with no coverage, those patients had more weight and BP check-ups (81.4% vs 65% and 96.1% vs 82.5%, respectively). Furthermore, the patients with health coverage in setting 1 had more height and foot examination check-ups (65.8% vs 36.7% and 10.5% vs 8.1%, respectively) compared with those reporting no health coverage. In terms of diagnostic testing, overall, laboratory testing was significantly higher in setting 1 compared with setting 2 among those who have health coverage compared with those who do not. As for referrals, those patients who reported having health coverage were referred more frequently to cardiologists and endocrinologists in setting 2 in comparison to those who were not covered (table 3).

DISCUSSION

This study explored patterns in NCD service delivery by setting, nationality and sex in two contrasting fragility settings in Lebanon. We identify better NCD service delivery in setting 1 (an urbanised area of Greater Beirut) as manifested by the higher rate of check-up provision, patient education, immunisation, diagnostic testing and referral rates when compared with setting 2 (predominantly rural area of the Beqaa Valley). Sex-related differences were observed mainly in relation to patient counselling and diagnostic testing. Our findings also highlight the impact of nationality on the provision of health services with analyses revealing that Lebanese patients received more services and education and were more likely to be referred to specialists when compared with Syrians. The findings also showed that health coverage status can impact the service delivery provided.

Our findings that urbanised setting 1 generally provides better NCD services is unsurprising and is in line with other recent work on NCDs in Lebanon, including qualitative work marking difficulties in service delivery in fragility setting 2 specifically.⁷ Furthermore, a recent national facility assessment conducted across PHCCs in Lebanon identified significant regional disparities between rural and urbanised areas,²⁸ similar to those reported in our study. The availability of, and accessibility to, health services are known to vary among the two selected settings. For instance, the rural areas of setting 2, which host the highest percentage of the Syrian refugee population (36%), are considered by the UN–Lebanon Interagency task force to be in major need for health institutional support,⁵ whereas setting 1 includes some of the most advanced medical services

Table 2 Description of all services delivered by patient health condition and frailty setting

	Diabetic (n=458)		Hypertensive (n=908)		Comorbid (n=334)		All patients (N=1700)	
	Frailty setting 1	Frailty setting 2	Frailty setting 1	Frailty setting 2	Frailty setting 1	Frailty setting 2	Frailty setting 1	Frailty setting 2
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Check-up items								
Height	35 (59.3)*	165 (41.8)	58 (54.2)*	301 (38.3)	61 (62.2)*	95 (40.9)	154 (58.3)*	561 (39.7)
Weight	34 (57.6)*	313 (79.2)	60 (55.6)*	609 (77.4)	65 (66.3)	172 (74.5)	159 (60)*	1094 (77.4)
Blood pressure	45 (76.3)*	367 (92.9)	88 (82.2)*	756 (96.1)	83 (84.7)†	212 (91.8)	216 (81.8)*	1335 (94.5)
Foot examination	13 (22.8)*	37 (9.4)	4 (8.3)	26 (5.3)	20 (21.1)	34 (14.8)	37 (18.5)*	97 (8.7)
Lifestyle advice								
Smoking	29 (50)	142 (39.2)	50 (47.2)	298 (43.8)	53 (54.6)	93 (46)	132 (50.6)*	533 (42.8)
Nutrition	45 (77.6)*	376 (95.2)	78 (78)	532 (79)	81 (81.8)*	218 (95.2)	204 (79.4)*	1126 (86.8)
Exercise	33 (66.9)†	273 (68.9)	54 (50.9)*	535 (67.6)	61 (62.2)*	176 (75.9)	148 (56.5)*	984 (69.3)
Alcohol	9 (15.8)*	14 (4.2)	18 (17.5)*	45 (7.1)	16 (16.3)†	17 (9.1)	43 (16.7)*	76 (6.6)
Diabetes management	33 (57.9)*	298 (75.4)	17 (37)	155 (32.9)	61 (61.6)*	182 (78.8)	111 (55)	635 (57.9)
Hypertension management	10 (35.7)	75 (39.7)	59 (55.7)*	599 (75.3)	58 (60.4)*	180 (77.9)	127 (55.2)*	854 (70.3)
Immunisations								
Hepatitis B	20 (33.3)*	7 (1.8)	35 (32.1)*	13 (1.6)	46 (45.5)*	11 (4.7)	101 (37.4)*	31 (2.2)
Influenza vaccine	4 (6.7)*	10 (2.5)	10 (9.2)*	16 (2.0)	20 (19.8)*	6 (2.6)	34 (12.6)*	32 (2.2)
Diagnostic testing								
FBS	52 (86.7)*	383 (96.2)	63 (57.8)*	378 (47.3)	90 (89.1)	217 (93.1)	205 (75.9)*	978 (68.4)
HbA1c	57 (95)	377 (94.7)	78 (72.9)*	285 (35.7)	96 (96)*	206 (88.8)	231 (86.5)*	868 (60.8)
Lipid profile	44 (73.3)	256 (64.3)	87 (81.3)*	538 (67.3)	90 (90)*	187 (80.6)	221 (82.8)*	981 (68.6)
CBC	27 (45)	164 (41.2)	60 (55.0)	382 (47.8)	61 (60.4)	137 (58.8)	148 (54.8)*	683 (47.8)
Platelets	32 (53.3)*	112 (28.1)	68 (64.2)*	283 (35.5)	70 (70)*	102 (44.2)	170 (63.9)*	497 (34.8)
Na	18 (30)*	14 (3.5)	64 (58.7)*	139 (17.4)	67 (66.3)*	56 (24)	149 (55.2)*	209 (14.6)
K	17 (54.8)*	13 (6.8)	60 (63.8)*	105 (16.1)	64 (70.3)*	44 (23.2)	141 (65.3)*	162 (15.7)
Ca	19 (31.7)*	15 (3.8)	64 (58.7)*	94 (11.8)	65 (64.4)*	44 (18.9)	148 (54.8)*	153 (10.7)
Uric acid	13 (41.9)*	40 (20.9)	63 (65.6)*	189 (29.3)	57 (64.8)*	56 (30.3)	133 (61.9)*	285 (27.9)
Creatinine	31 (51.7)*	95 (23.9)	58 (53.2)*	86 (10.8)	70 (69.3)*	65 (27.9)	159 (58.9)*	246 (17.2)
SGPT	21 (35.0)*	38 (9.5)	43 (41.0)*	32 (4.0)	44 (44.9)*	28 (12.1)	108 (41.1)*	98 (6.9)
SGOT	23 (38.3)*	35 (8.8)	17 (32.1)*	10 (2.0)	44 (45.4)*	23 (10.0)	84 (40.0)*	68 (6.0)
Urine test	44 (73.3)*	262 (65.8)	79 (72.5)*	450 (56.3)	69 (68.3)	153 (65.7)	192 (71.1)*	865 (60.5)
EKG	34 (56.7)*	126 (31.7)	73 (77.7)*	274 (44.9)	74 (74.7)*	123 (53.5)	181 (71.5)*	523 (42.2)
Referral to specialists								

Continued



Table 2 Continued

	Diabetic (n=458)		Hypertensive (n=908)		Comorbid (n=334)		All patients (N=1700)	
	Fragility setting 1	Fragility setting 2	Fragility setting 1	Fragility setting 2	Fragility setting 1	Fragility setting 2	Fragility setting 1	Fragility setting 2
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Endocrinologist	28 (46.7)	198 (49.7)	5 (4.6)	42 (5.3)	40 (39.6)	96 (41.2)	73 (27)	336 (23.5)
Cardiologist	10 (32.3)	47 (24.5)	74 (67.9)	556 (69.6)	57 (58.2)	149 (64.5)	141 (59.2)	752 (61.5)
Ophthalmologist	18 (30)	94 (23.6)	12 (11)	76 (9.5)	33 (32.7)	53 (22.7)	63 (23.3)*	223 (15.6)
Dentist	5 (8.3)*	4 (1.0)	5 (4.6)*	8 (1.0)	7 (7.1)*	4 (1.7)	17 (6.4)*	16 (1.1)
Clinical dietician	1 (1.7)	2 (0.5)	7 (6.5)	9 (1.1)	18 (18.2)	7 (3.0)	26 (9.7)*	18 (1.3)
Other specialists	8 (13.3)	47 (11.8)	9 (8.5)	39 (4.9)	24 (24.2)*	30 (12.9)	41 (15.5)*	116 (8.1)

*P<0.05.
†P<0.10.
Ca, calcium; CBC, complete blood count; DM, diabetes mellitus; EKG, electrocardiography; FBS, fasting blood sugar; HbA1c, haemoglobin A1c; HP, hypertension; K, potassium; Na, sodium; SGOT, serum glutamic-oxaloacetic transaminase; SGPT, serum glutamic-pyruvic transaminase.

and facilities,²⁹ with a lower percentage of Syrian refugees' settlement (26%),³⁰ hence having a lower burden on the health system.

Our results suggest women were less likely than men to be offered lifestyle advice on nutrition, smoking and exercise and less access to some specific tests (eg, lipid tests, uric acid, creatinine and EKG), especially in setting 2. Our results are in agreement with studies that show that women are more likely to underuse necessary healthcare³¹ and less likely to be instructed on secondary prevention strategies compared with men.³² Several studies highlighted gender inequalities in the use of healthcare services.^{33 34} Among the factors that contribute to women's disproportionate lack of access to care are traditional gender norms, the limited-decision making power, poorer access to resources, and the decreased economic and social utility compared with men.^{33 34} In addition, this could be also attributed to the fact that women tend to seek help less frequently³⁵ or at more advanced stages compared with men.³⁶ The barriers to female patients' access to the aforementioned preventive and curative NCD care services need to be systematically investigated to guide evidence-based decision making on the necessary remedial activities and programmes to restore equitable access to NCD services. The findings further call on policy makers and decision makers to work collaboratively with underprivileged and refugee communities to design, implement and evaluate evidence-based targeted programmes that would address the gender gap in the NCD care processes in fragile settings.

In addition, our results illustrated the contribution of nationality to discrepancies in service use. Earlier studies reported underuse of NCD services among Syrian refugees compared with Lebanese community members.^{37 38} The highly privatised Lebanese healthcare system and geographical location render healthcare inaccessible and expensive to a large proportion of Lebanese populations, with effects being more exacerbated for Syrian refugees.³⁹ Our results are consistent with recent studies which identified significant gaps between refugees and host community members in care seeking and reported that host community members had better access to care and fewer reports of medication interruption compared with refugees.^{37 38} Future studies should build on the findings of this one to investigate the root causes for this discrepancy in NCD service delivery by nationality. Furthermore, relief and funding agencies need to prioritise the provision of equitable access to NCD care for refugees since the poor detection and control of NCDs do not only increase the number of patients seeking care services but also increase the cost of treatment on the long run. The economic collapse that Lebanon has been witnessing over the last couple of years may create an opportunity for the international community to expand the care networks of refugees at a more affordable cost.

Table 3 Description of all services delivered by gender, nationality and health coverage, and by fragility setting*

	Gender						Nationality						Health coverage					
	Female			Male			Lebanese			Syrians			Yes			No		
	Fragility setting 1	Fragility setting 2	N (%)	Fragility setting 1	Fragility setting 2	N (%)	Fragility setting 1	Fragility setting 2	N (%)	Fragility setting 1	Fragility setting 2	N (%)	Fragility setting 1	Fragility setting 2	N (%)	Fragility setting 1	Fragility setting 2	N (%)
Check-up items																		
Height	107 (59.1)	366 (38.8)†	47 (56.6)	195 (41.5)†	118 (58.4)	198 (39.5)†	36 (58.1)	363 (39.8)†	52 (65.8)	261 (36.7)††	98 (55.4)	299 (42.8)†						
Weight	111 (61.0)	726 (77.0)†	48 (57.8)	369 (78.3)†	121 (59.6)	387 (76.9)†	38 (61.3)	708 (77.7)†	52 (65.0)	578 (81.4)††	103 (58.2)	516 (73.6)†						
Blood pressure	148 (81.8)	895 (94.9)†	68 (81.9)	441 (93.6)†	169 (83.3)	471 (93.6)†	47 (77.0)	865 (95.0)†	66 (82.5)	682 (96.1)††	144 (81.8)	652 (93.0)†						
Foot examination	26 (18.8)	57 (7.7) †	11 (17.7)	40 (10.7)	24 (15.7)	45 (11.6)§	13 (27.7)	52 (7.2)†	6 (10.5)	47 (8.1)	29 (21.2)	50 (9.4)†						
Lifestyle advice																		
Smoking	91 (50.8)	316 (39.0)†*	41 (50.0)	218 (50.0)	95 (48.0)	205 (45.1)	37 (58.7)	329 (41.6)†	43 (53.8)	250 (41.1)†	86 (49.4)	283 (44.6)						
Nutrition	140 (79.1)	722 (83.3)*	64 (80.0)	405 (94.0)†	155 (79.5)	405 (89.8)†§	49 (79.0)	722 (85.2)	62 (81.6)	566 (85.6)	137 (78.7)	558 (88.0)†						
Exercise	101 (56.4)	638 (67.1)†*	47 (56.6)	347 (73.8)†	106 (53.3)	347 (69.3)†	42 (66.7)	638 (69.3)	43 (53.1)	495 (69.1)†	102 (58.3)	488 (69.5)†						
Alcohol	28 (15.7)	27 (3.5)†*	15 (18.8)	49 (12.4)	25 (12.7)§	30 (7.1)†	18 (29.5)	46 (6.2)†	6 (7.4)†	35 (6.3)	36 (21.3)	40 (6.7)†						
DM management	79 (57.2)	402 (55.3)*	32 (50.0)	234 (63.1)†	81 (52.6)	241 (62.4)†§	30 (62.5)	395 (55.5)†	34 (58.6)	322 (57.2)	75 (54.0)	312 (68.5)						
HP management	95 (58.6)	582 (70.4)†	32 (47.1)	273 (70.2)†	93 (53.1)	294 (70.0)†	34 (61.8)	561 (70.5)	39 (55.7)	472 (73.8)††	87 (55.1)	382 (66.7)†						
Immunisations																		
Hepatitis B	69 (36.9)	16 (1.7)†	32 (38.6)	15 (3.2)†	83 (40.3)	13 (2.6)†	18 (28.1)	18 (1.9)†	33 (40.2)	11 (1.5)†	63 (35.6)	18 (2.5)†						
Influenza vaccine	24 (12.8)	19 (2.0)†	10 (12.0)	13 (2.7)†	30 (14.6)	15 (3.0)†	4 (6.3)	17 (1.8)†	9 (11.0)	12 (1.7)†	24 (13.6)	19 (2.7)†						
Diagnostic testing																		
FBS	143 (76.5)	641 (66.9)†	62 (74.7)	338 (71.5)	161 (78.2)	363 (71.7)§	44 (68.8)	616 (66.6)	67 (81.7)	496 (69.1)†	130 (73.4)	480 (67.7)						
HbA1c	158 (85.4)	572 (59.8)†	73 (89.0)	297 (62.8)†	179 (88.2)	332 (65.7)†§	52 (81.3)	537 (58.1)†	71 (86.6)	419 (58.4)†	151 (85.8)	448 (63.2)†						
Lipid profile	152 (82.2)	632 (66.0)†*	69 (84.1)	350 (74.0)†	171 (84.2)	384 (76.0)†§	50 (78.1)	598 (64.6)†	68 (82.9)	491 (68.4)†	144 (81.8)	489 (69.0)†						
CBC	103 (55.1)	464 (48.4)	45 (54.2)	220 (46.5)	121 (58.7)§	217 (42.9)†§	27 (42.2)	467 (50.5)	45 (54.9)	352 (49.0)	96 (54.2)	331 (46.7)						
Platelets	118 (63.8)	351 (36.7)†*	52 (64.2)	146 (31.0)†	135 (66.8)	159 (31.5)†	35 (54.7)	338 (36.6)†	56 (68.3)	253 (35.3)†	107 (61.1)	242 (34.1)†						
Na	101 (54.0)	141 (14.7)†	48 (57.8)	68 (14.4)†	120 (58.3)	101 (20.0)†§	29 (45.3)	108 (11.7)†	52 (63.4)	93 (13.0)†	92 (52.0)	115 (16.2)†						
K	96 (63.2)	114 (16.1)†	45 (70.3)	48 (14.7)†	113 (68.9)†§	69 (20.1)†§	28 (53.8)	93 (13.4)†	49 (76.6)†	74 (12.9)††	88 (59.9)	88 (19.0)†						
Ca	102 (54.5)	109 (11.4)†	46 (55.4)	44 (9.3)†	118 (57.3)	71 (14.0)†§	30 (46.9)	82 (8.9)†	51 (62.2)	67 (9.3)†	93 (52.5)	85 (12.0)†						
Uric acid	87 (58.8)	174 (24.8)†*	46 (68.7)	111 (34.7)†	106 (65.0)	135 (39.7)†§	27 (51.9)	150 (22.0)†	48 (75.0)†	156 (27.5)†	80 (54.8)†	128 (28.1)†						
Creatinine	113 (60.4)	131 (13.7)†*	46 (55.4)	115 (24.3)†	126 (61.2)	119 (23.5)†§	33 (51.6)	127 (13.7)†	53 (64.6)	111 (15.5)†	98 (55.4)	134 (18.9)†						
SGPT	78 (42.6)	57 (6.0)†	30 (37.5)	41 (8.7)†	91 (45.7)†§	57 (11.4)†§	17 (26.6)	41 (4.4)†	38 (46.3)	39 (5.4)††	65 (37.8)	59 (8.3)†						
SGOT	61 (42.1)	40 (5.3)†	23 (35.4)	28 (7.3)†	72 (45.0)†§	41 (10.5)†§	12 (24.0)	27 (3.6)†	26 (43.3)	29 (4.9)†	54 (37.8)	39 (7.1)†						
Urine test	137 (73.3)	570 (59.5)†	55 (66.3)	295 (62.4)	150 (72.8)	333 (65.8)§	42 (65.6)	532 (57.5)	67 (81.7)†	453 (63.1)††	118 (66.7)	411 (68.0)†						
EKG	122 (70.1)	304 (36.8)†*	59 (74.7)	219 (53.2)†	151 (77.8)§	209 (49.2)†§	30 (50.8)	314 (38.6)	61 (79.2)	251 (39.5)††	114 (67.9)	271 (45.0)†						
Referral to specialists																		
Endocrinologist	54 (28.9)	226 (23.6)	19 (22.9)	110 (23.3)	62 (30.1)§	134 (26.5)§	11 (17.2)	202 (21.8)	23 (28.0)	150 (20.9)†	43 (24.3)	184 (26.0)						

Continued

Table 3 Continued

	Gender						Nationality						Health coverage					
	Female			Male			Lebanese		Syrians		Yes		No					
	Fragility setting 1	Fragility setting 2	N (%)	Fragility setting 1	Fragility setting 2	N (%)	Fragility setting 1	Fragility setting 2	N (%)	Fragility setting 1	Fragility setting 2	N (%)	Fragility setting 1	Fragility setting 2	N (%)			
Cardiologist	97 (58.1)	486 (58.4)*	44 (62.0)	267 (68.3)	112 (62.2)	293 (69.6)§	29 (50.0)	460 (57.4)	48 (67.6)	374 (58.2)†	88 (54.7)	376 (65.2)†						
Ophthalmologist	49 (26.2)	121 (12.6)†*	14 (16.9)	102 (21.6)	53 (25.7)	119 (23.5)§	10 (15.6)	104 (11.2)	15 (18.3)	104 (14.5)	42 (23.7)	117 (16.5)†						
Dentist	13 (7.1)	11 (1.1)†	4 (4.8)	5 (1.1)†	13 (6.4)	7 (1.4)†	4 (6.3)	9 (1.0)†	7 (8.6)	8 (1.1)†	10 (5.7)	8 (1.1)†						
Clinical dietician	24 (13.0)*	8 (0.8)†*	2 (2.4)	10 (2.1)	25 (12.3)§	9 (1.8)†	1 (1.6)	9 (1.0)	7 (8.5)	6 (0.8)†	17 (9.7)	11 (1.6)†						

*Indicates statistical difference between gender groups within fragility settings with a p value of <0.05.
†Indicates statistical difference between the fragility settings with a p value of 0.05.
‡Indicates statistical difference between health coverage groups within fragility settings with a p value of 0.05.
§Indicates statistical difference between nationality groups within fragility settings with a p value of <0.05.
Ca, calcium; CBC, complete blood count; DM, diabetes mellitus; EKG, electrocardiography; FBS, fasting blood sugar; HbA1c, haemoglobin A1c; HP, hypertension; K, potassium; Na, sodium; SGOT, serum glutamic-oxaloacetic transaminase; SGPT, serum glutamic-pyruvic transaminase.

The study further highlights the importance of considering the various aspects that would further exacerbate and compound the fragility of patients with NCD. For example, Syrian refugees are more fragile compared with host communities; female patients are more fragile compared with male patients; and patients in setting 2 are more fragile compared with those in setting 1. A Syrian female patient residing in setting 2 is thus expected to have the highest propensity of being disadvantaged in the access and scope of service delivery. Relief programmes should not offer the same size for all and should be structured with sensitivity to the level of need resulting from compounded fragility. Future research could explore this concept in further detail to inform programming and service delivery.

It has to be noted that data collection was undertaken in extremely challenging conditions. The first phase of data collection was supposed to start in October 2019, which coincided with the beginning of the Lebanese revolution, the deterioration in the value of the national currency (Lebanese lira), and after resuming data collection, the first COVID-19 cases were detected in Lebanon and a total lockdown was imposed for almost 3 months. The pandemic did not only affect data collection but also impacted the access of patients to healthcare due to lockdown and fear of contracting COVID-19. Thus, screening and diagnosing rates are lower, especially since less people are accompanying patients. Although this study included a representative sample of health facilities from two regions in Lebanon, the sample might not be representative of the entire country. As a descriptive study, all p values should be regarded as exploratory rather than hypothesis testing, and moderate p values should be interpreted cautiously.

In conclusion, this study contributed to the understanding of equity of service delivery by setting and gender in an already fragile setting. These findings should be considered when reaching service delivery investments and policy decisions and provide solid ground for improvement of MoPH endeavours towards the achievement of universal health coverage such as the national unified long-term primary healthcare subsidisation protocol.

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Appendix A – Facility Assessment

Date of assessment:

Persons involved in completing assessment:

Eligibility assessment

Criteria	Number	Yes	No
Facility is located in Greater Beirut or Beqaa	NA		
Facility delivers NCD services (as reported by the head of the facility – consultations for diabetes and hypertension)	NA		
Facility offers services to both Lebanese and Syrian refugees: at minimum 50 consultations for Lebanese and 20 consultations for Syrians per month			
Facility has a minimum patient load for diabetes of 20 outpatient consultations per week and 20 hypertension outpatient consultations per week			
Consent to participate	NA		
Eligibility		Eligible	Ineligible

Affiliation of the PHC:

- Government
- Non-governmental

Location (Greater Beirut or Beqaa):

ID number:

A. Service availability**What type of services is available?**

	1.Yes	0.No	Comment on why resources are/are not available
1. Reproductive, Maternal, Newborn, and Child Health (RMNCH)			
2. Communicable disease services			
3. Non-communicable diseases			
4. Minor and major injury services			
5. Ear, Nose, and Throat (ENT) services			
6. Ophthalmology			
7. Other			

B. Health information systems**What is available at clinic level?**

	1.Yes	0.No	Comment on why resources are/are not available
1. Health information technology resources and systems			
2.Does the facility have electronic stock card or log books for medicine?			
3.Does the facility have electronic stock card or log books for consumables (e.g. syringes, bandages)?			
4.Does the facility keep a record of all the patient visits?			
5.Are the records kept in a registry system?			
6.Are patient files retrieved and consulted each time they visit the facility?			
7.Are medical records of diabetic/hypertensive patients computerized?			

8. Is the Internet used for communication and information exchange regarding diabetic/hypertensive patients?

9. Are there magnetic cards developed for diabetic/hypertensive patients/user identification?

10. Is there an electronic scheduling system for diabetic/hypertensive patients' appointments?

11. Is there an electronic scheduling system for diabetic/hypertensive patients' examinations?

12. Is there an electronic scheduling system for diabetic/hypertensive patients' admissions?

13. Are there any computerized protocols for diagnosis and treatment support of diabetic/hypertensive patients?

C. Human resources

What type of human resources are available? How many?

1. Yes 0. No How many?

1. Physicians

2. Psychologists

3. Registered nurses

4. Registered midwives

5. Social workers

6. Occupational therapists

7. Pharmacists

8. Dietitians/nutritionists

9. Community health worker/health educator

10. Human Resources (available upon referral)

D. Facility infrastructure

Please tell us more about the facility infrastructure

	(1) Strongly Agree, (2) Agree, (3) Undecided, (4) Disagree, (5) Strongly Disagree	Comments
1.The building is in a good state of repair (e.g. windows are not broken, paint is not peeling from the walls)		
2.The building is accessible for persons with physical disabilities		
3.The building's lighting (artificial and natural), heating and ventilation provide a comfortable living environment		
4.The physical equipment and supplies are sufficient and in good condition		
5.Measures are in place to protect people against injury through fire		
6.The toilet facilities are clean and working properly		
7.The toilet facilities allow privacy, and there are separate facilities for men and women		
8.The toileting needs of service users who have impaired mobility or other physical disabilities are accommodated		
9.There are ample furnishings, and they are comfortable and in good condition		
10.The layout of the facility is conducive to interaction between and among service users, staff and visitors		

E. Equipment for NCDs

1. How often are blood pressure measuring devices (BPMDs) calibrated and checked for accuracy?

1. Once a year or more
2. Less than once a year
3. Never
4. Don't know

2. How often are weight scales calibrated and checked for accuracy?

1. Once a year or more
2. Less than once a year
3. Never
4. Don't know

3. How often are glucometers calibrated and checked for accuracy?

1. Once a year or more
2. Less than once a year
3. Never
4. Don't know

4. Are there any consumables that you need?

5. Are they accessible?

6. How is the equipment usually repaired and maintained?

1. Repaired at the facility
2. Sent back to manufacturer for repair
3. Other, specify _____

7. What, if any, are the difficulties in getting repairs to equipment done?

.....

F. Infrastructure/services

1. Are the following procedures being conducted at the facility when needed?

	1.Yes	0. No, why not?
1.Administration of oxygen (via mask or tube)		
2.Administration of intravenous (IV) fluids/drip		
3.IV injection		
4.Intramuscular (IM) injection		
5.Subcutaneous injection		
6.Electrocardiography (ECG)		
7.Cardiopulmonary resuscitation		
8.Manual ventilation with a bag valve mask resuscitator (ambu-bag)		

9. Visual acuity examination

10. Examination for neuropathy with knee hammer/tuning fork, etc.

11. Peak flow test

12. Ophthalmoscopy

2. Do you have a bed where you can stabilize a very ill patient before transfer to a referral institution?

- 1. Yes
- 0. No

3. If injections are provided at the facility, what type of needle is used?

- 1. Disposable needles
- 2. Reusable, sterilized needles.
- 3. How are needles sterilized?
- 4. Injections not provided at the facility
- 5. Don't know

4. Is there a safe disposal for used needles available?

- 1. Yes
- 0. No

G. Utilization of services

1. What is the total number of visits to the health facility for outpatient services last month?

- 1. Total number of visits last month: _____
- 2. On average how many consultations were for diabetes? _____

This figure is based on:

- a. Register/record
- b. Estimation

- 3. On average how many consultations were for hypertension? _____

This figure is based on:

- a. Register/record
- b. Estimation

2. What is the total number of visits to the health facility for outpatient services yesterday?

- 1. Total number of visits yesterday: _____
- 2. On average how many consultations were for diabetes? _____

This figure is based on:

- a. Register/record
- b. Estimation

3. On average how many consultations were for hypertension? _____
This figure is based on:

- a. Register/record
- b. Estimation

3. How many of the patient visits made yesterday were for:

1. Number of visits made for hypertension: _____

This figure is based on:

- a. Register/record
- b. Estimation

2. Number of visits made for diabetes: _____

This figure is based on:

- a. Register/record
- b. Estimation

4. How do patients access the facility?

- 1. Walk-in only
- 2. By appointment only
- 3. Combination of appointments and walk-ins

H. Financing and administration

1. Do patients pay the facility for medicines?

- 1. Yes, full payment
- 2. Yes, partial payment
- 0. No, medicines are provided for free
- 3. Other:....

2. If medicines are provided for free or for partial payment, who subsidizes it?

- | | |
|-------------------|------------------------------------|
| 1. Specify: | Proportion paid by patient:% |
| Specify: | Proportion paid by patient:% |
| Specify: | Proportion paid by patient:% |
| Specify: | Proportion paid by patient:% |
| Specify: | Proportion paid by patient:% |
| Specify: | Proportion paid by patient:% |
| Specify: | Proportion paid by patient:% |
| 8. Don't know | |

3. Do patients pay the facility for consultations?

1. Yes, full payment
2. Yes, partial payment
0. No, consultations are provided for free
3. Other: _____

4. If consultations are provided for free or for partial payment, who subsidizes it?

- | | |
|----------------|-----------------------------------|
| Specify: | Proportion paid by patient: |
| Specify: | Proportion paid by patient: |
| Specify: | Proportion paid by patient: |
| Specify: | Proportion paid by patient: |
| Specify: | Proportion paid by patient: |
| Specify: | Proportion paid by patient: |
| Specify: | Proportion paid by patient: |

8. Don't know

5. Do patients pay the facility for diagnostic tests?

1. Yes, full payment
2. Yes, partial payment
0. No, diagnostic tests are provided for free
3. Other: _____

6. If diagnostic tests are provided for free or for partial payment, who subsidizes it?

- | | |
|----------------|-----------------------------------|
| Specify: | Proportion paid by patient: |
| Specify: | Proportion paid by patient: |
| Specify: | Proportion paid by patient: |
| Specify: | Proportion paid by patient: |
| Specify: | Proportion paid by patient: |
| Specify: | Proportion paid by patient: |
| Specify: | Proportion paid by patient: |

8. Don't know

I. Diabetes services - Financing**1. For how long have the diabetes services been provided at the clinic?**

2. Do patients pay the facility for diabetes medicines?

1. Yes, full payment
2. Yes, partial payment
0. No, medicines are provided for free
3. Other:....

3. If diabetes medicines are provided for free or for partial payment, who subsidizes it?

- | | |
|------------------|-----------------------------------|
| 1.Specify: | Proportion paid by patient: |
| 2.Specify: | Proportion paid by patient: |
| 3.Specify: | Proportion paid by patient: |
| 4.Specify: | Proportion paid by patient: |
| 5.Specify: | Proportion paid by patient: |
| 6.Specify: | Proportion paid by patient: |
| 7.Specify: | Proportion paid by patient: |
| 8.Don't know | |

4. Do patients pay the facility for diabetes consultations?

1. Yes, full payment
2. Yes, partial payment
0. No, consultations are provided for free
3. Other: _____

5. If diabetes consultations are provided for free or for partial payment, who subsidizes it?

- | | |
|------------------|-----------------------------------|
| 1.Specify: | Proportion paid by patient: |
| 2.Specify: | Proportion paid by patient: |
| 3.Specify: | Proportion paid by patient: |
| 4.Specify: | Proportion paid by patient: |
| 5.Specify: | Proportion paid by patient: |
| 6.Specify: | Proportion paid by patient: |
| 7.Specify: | Proportion paid by patient: |
| 8.Don't know | |

6. Do patients pay the facility for diabetes diagnostic tests?

1. Yes, full payment
2. Yes, partial payment

0. No, diagnostic tests are provided for free

3. Other: _____

7. If diabetes diagnostic tests are provided for free or for partial payment, who subsidizes it?

1.Specify: Proportion paid by patient:%

2.Specify: Proportion paid by patient:%

3.Specify: Proportion paid by patient:%

4.Specify: Proportion paid by patient:%

5.Specify: Proportion paid by patient:%

6.Specify: Proportion paid by patient:%

7.Specify: Proportion paid by patient:%

8. Don't know

J. Hypertension services - Financing

1. For how long have the hypertension services been provided at the clinic?

2. Do patients pay the facility for hypertension medicines?

1. Yes, full payment

2. Yes, partial payment

0. No, medicines are provided for free

3. Other: _____

3. If hypertension medicines are provided for free or for partial payment, who subsidizes it?

1.Specify: Proportion paid by patient:%

2.Specify: Proportion paid by patient:%

3.Specify: Proportion paid by patient:%

4.Specify: Proportion paid by patient:%

5.Specify: Proportion paid by patient:%

6.Specify: Proportion paid by patient:%

7.Specify: Proportion paid by patient:%

8. Don't know

4. Do patients pay the facility for hypertension consultations?

1. Yes, full payment
2. Yes, partial payment
0. No, consultations are provided for free
3. Other: _____

5. If hypertension consultations are provided for free or for partial payment, who subsidizes it?

- | | |
|------------------|-----------------------------------|
| 1.Specify: | Proportion paid by patient: |
| 2.Specify: | Proportion paid by patient: |
| 3.Specify: | Proportion paid by patient: |
| 4.Specify: | Proportion paid by patient: |
| 5.Specify: | Proportion paid by patient: |
| 6.Specify: | Proportion paid by patient: |
| 7.Specify: | Proportion paid by patient: |
| 8.Don't know | |

6. Do patients pay the facility for hypertension diagnostic tests?

1. Yes, full payment
2. Yes, partial payment
0. No, diagnostic tests are provided for free
- 3.Other: _____

7. If hypertension diagnostic tests are provided for free or for partial payment, who subsidizes it?

- | | |
|------------------|-----------------------------------|
| 1.Specify: | Proportion paid by patient: |
| 2.Specify: | Proportion paid by patient: |
| 3.Specify: | Proportion paid by patient: |
| 4.Specify: | Proportion paid by patient: |
| 5.Specify: | Proportion paid by patient: |
| 6.Specify: | Proportion paid by patient: |
| 7.Specify: | Proportion paid by patient: |
| 8.Don't know | |

Appendix B - Beneficiary Survey

“Please do not refer to the names of the people and facilities or provide any identifiable information”

A- Respondent’s socio-demographic characteristics

I would like to start by asking you some background questions before asking you questions on your health. This information is confidential and will only be used for research purposes.

1. What is your nationality:

1. Lebanese
2. Syrian
3. If Syrian, when did you come to Lebanon?
Year:

2. Have you ever been diagnosed with Diabetes Mellitus?

1. Yes
0. No

3. Have you ever been diagnosed with Hypertension?

1. Yes
0. No

4. Gender

- Female
- Male

5. How old are you?

(Years) _____

6. What is your weight?

(Kilos) _____

7. What is your height?

(Centimeters) _____

8. What is your current marital status?

1. Never Married
2. Currently Married
3. Separated
4. Divorced
5. Widowed

9. What is the highest level of education that you have completed?

1. No formal schooling
2. Primary school completed
3. Secondary school completed
4. High school (or equivalent) completed
5. University completed

6. Post graduate degree completed

10. What is your current employment status?

1. Working
2. Not working
3. Unable to work

11. What is the number of rooms within the household you live in? (The kitchen and the toilets are excluded)

.....

12. How many residents are there in the household? (Including the housekeepers?)

.....

B. Risk Factors

I will now ask you questions about your daily life.

Tobacco consumption

13. Do you currently smoke any tobacco products such as cigarettes, cigars, or pipes?

1. Daily
2. Yes, but not daily
3. No, not at all

14. For how many years have you been smoking daily? _____

15. On average, how many of the following products do you smoke each day?

1. Cigarette
2. Narguileh
3. Other:

Alcohol consumption (I understand this may be a sensitive topic, and I would like to stress again the confidentiality and privacy of the information. If the participant feels uncomfortable he/she can skip answering any of the addressed question(s))

16. Have you ever consumed a drink that contains alcohol (such as beer, wine, etc.)?

1. Yes
0. No

17. During the past 7 days, how many standard drinks of any alcoholic beverage did you have each day?

1. Monday _____
2. Tuesday _____
3. Wednesday _____
4. Thursday _____
5. Friday _____
6. Saturday _____
7. Sunday _____

Nutrition (*cards that illustrate what a serving means will be prepared*)

Now I am going to ask you about the fruit and vegetables you usually eat.

18. How many servings of fruit do you eat on a typical day? _____

19. How many servings of vegetables do you eat on a typical day? _____

Physical Activity

Now I am going to ask you about the time you spent being physically active in the last 7 days. Please answer each question even if you do not consider yourself to be an active person. Think about the activities you do at work, as part of your house and yard work, to get from places to place, and in your spare time for recreation, exercise or sport.

20. During the last 7 days, on how many days did you do vigorous physical activities? Vigorous activities make you breathe much harder than normal and may include heavy lifting, digging, aerobics, or fast bicycling. Think only about those physical activities that you did for at least 10 minutes at a time.

Days:

21. How much time did you usually spend doing vigorous physical activities on one of those days?

Minutes per day _____

Moderate Activity

Now think about activities which take moderate physical effort that you did in the last 7 days.

22. During the last 7 days, on how many days did you do moderate physical activities? Moderate physical activities make you breathe somewhat harder than normal and may include carrying light loads, bicycling at a regular pace, or doubles tennis. Do not include walking.

Again, think about only those physical activities that you did for at least 10 minutes at a time.

Days:

23. How much time did you usually spend doing moderate physical activities on one of those days?

Minutes per day _____

Walking

Now think about the time you spent walking in the last 7 days. This includes at work and at home, walking to travel from place to place, and any other walking that you might do solely for recreation, sport, exercise, or leisure.

24. During the last 7 days, on how many days did you walk for at least 10 minutes at a time?

25. How much time did you usually spend walking on one of those days?

Minutes per day _____

C-History of Disease

Now I would like to read to you questions about some health problems or health care needs that you and the young children in this house may have experienced, and the treatment or medical care that you may have received.

26. Have you ever been diagnosed with diabetes or hypertension?

Yes (diabetes) – continue

Yes (hypertension) – skip to question 29

Yes (both) – continue

27. When were you diagnosed with diabetes? Even an approximate answer is helpful.

1. Year: _____

2. Month: _____

3. N/A

28. Where were you diagnosed with diabetes?

1. _____

2. N/A

29. When were you diagnosed with hypertension? Even an approximate answer is helpful.

1. Year: _____

2. Month: _____

3. N/A

30. Where were you diagnosed with hypertension?

1. _____

2. N/A

31. Do you suffer from any other disease?

1. Yes (please specify)

0. No

2. Don't know

D-Health services

I will now ask you questions about the health care services you receive.

Diabetes Mellitus Benefit Package: *(if patient says yes to diabetes diagnosis)*

32. During the past year, how many times did you see your GP/family doctor?

33. How many of these visits directly related to your diabetes?

34. Were you referred to – and then attended appointments with – other specialists?

Specialist	Referred (1.Yes/0.No)	Reason for referral (routine / other: please specify)	Attended
------------	-----------------------	---	----------

- 1.Endocrinologist
- 2.Ophtalmologist
- 3.Other specialties
(Cardio/Nephro/Vascular)
- 4.Dentist
- 5.Clinical dietician

35. Now let me ask you about the immunizations and diagnostic tests you receive.

Test	Received (1.Yes/0.No)	Any other information (e.g. do they receive it here? Do they-co pay?)
1.Hepatitis B vaccine		
2.Flu Vaccine		
3.Fasting Blood Sugar		
4.Hba1c		
5.Lipid profile		
6.Other blood tests (CBC)		
7.Platelets		
8.Creatinine – (for kidney function)		
9.SGPT (for liver function)		
10.SGOT (for liver function)		
11.Urine test (Urinalysis)		
12.Urine test (spot urine microalbumin)		
13.EKG		

36. Now I would like to ask you what usually happens during your examinations. Does the physician or the nurse check:

Consultation element	Frequency (1.every visit, 2.almost every visit, 3.some visits, 4.almost never, 5.never)
1.Height	
2.Weight	
3.Blood pressure	
4.Foot examination (<i>for ulcers etc</i>)	

36. Does your health care provider offer you any advice on: (I would like to stress again the confidentiality and privacy of the information)

Consultation element	Frequency (1.every visit, 2.almost every visit, 3.some visits, 4.almost never, 5.never)	Do you find this advice relevant? (1.very relevant, 2.relevant, 3.moderately relevant, 4.slightly relevant, 5.not relevant)
1.Smoking		
2.Healthy nutrition (sugar)		
3.Exercise		
4.Alcohol consumption		
5.Managing your diabetes		

Hypertension Benefit Package:

Hypertention Benefit Package: *(if patient says yes to hypertension diagnosis)*

37. During the past year, how many times did you see your GP/family doctor?

38. How many of these visits directly related to your hypertension?

39. Were you referred to – and then attended appointments with – other specialists?

Specialist	Referred (1.Yes/0.No)	Reason for referral (routine / other: please specify)	Attended
1.Cardiologist			
2.Ophthalmologist			
3.Other specialties (Nephro/Vascular)			
4.Dentist			
5.Clinical dietician			

40.Now let me ask you about the immunizations and diagnostic tests you receive.

Test	Received (1.Yes/0.No)	Any other information (e.g. do they receive it here? Do they-co pay?)
1.Hepatitis B vaccine		
2.Flu Vaccine		
3.Fasting Blood Sugar		
4.Hba1c		
5.Lipid profile		
6.Other blood tests (CBC)		
7.Platelets		
8.Na		

- 9.K
- 10.Ca
- 11.Uric acid
- 12.Creatinine – (for kidney function)
- 13.SGPT (for liver function)
- 14.Urine test (Urinalysis)
- 15.Urine test (spot urine microalbumin)
- 16.EKG

41. Now I would like to ask you what usually happens during your examinations. Does the physician or the nurse check:

Consultation element	Frequency (1.every visit, 2.almost every visit, 3.some visits, 4.almost never, 5.never)
1.Height	
2.Weight	
3.Blood pressure	

42. Does your health care provider offer you any advice on: (I would like to stress again the confidentiality and privacy of the information)

Consultation element	Frequency (1.every visit, 2.almost every visit, 3.some visits, 4.almost never, 5.never)	Do you find this advice relevant? (1.very relevant, 2.relevant, 3.moderately relevant, 4.slightly relevant, 5.not relevant)
1.Smoking		
2.Healthy nutrition (salt)		
3.Exercise		
4.Alcohol consumption		
5.Managing your hypertension		

E. Patient self-management

43. Do you feel you have enough knowledge to manage your diabetes at home?

- 1-disagree
- 2-partially disagree
- 3-neutral
- 4-partially agree
- 5-agree
- 6-N/A

44. Do you feel you have enough knowledge to manage your hypertension at home?

- 1-disagree
- 2-partially disagree
- 3-neutral
- 4-partially agree
- 5-agree

6-N/A

45. What challenges do you face?

INVENTORY OF MEDICINES AND DRUGS

We are interested in knowing about the availability and use of certain medicines and drugs. Remember that whatever information you give me is confidential and will only be used for research purposes.

46. During the past year, the last time you sought care for diabetes or hypertension did the health care provider prescribe any medicine for you?

a. Diabetes:

1. Yes
0. No
2. N/A

b. Hypertension:

1. Yes
0. No
2. N/A

47. If yes: which medicines were they?

48. Of the medicines that were prescribed for you, how many of them were you able to get?

1. All of them
2. Most
3. Some
4. Very few
5. None of them

49. Were these medications provided to you from the PHCC or did you have to get them yourself?

50. Which reason best explains why you did not get all the medicines you were prescribed?

1. Could not afford
2. Could not find all medicines
3. Did not believe all the medications were needed
4. Started to feel better
5. Already had some of the medicines at home
6. Other

F- Outcome (hospitalizations, glycemc episodes...)

51. When was the last time that you checked the HbA1C in the past year?

1. Date:
2. Never
3. Don't know

52. What was the HbA1C reading?

1. Value:

2. Don't know
3. N/A

53. How many times were you hospitalized for conditions related to diabetes in the past year?

1. Number of times:
2. Don't know
3. N/A

54. During the past four weeks, did you experience any symptoms of hypoglycemia? (shakiness, dizziness, sweating, hunger, irritability or moodiness, anxiety or nervousness)

55. When was the last time that you checked your blood pressure in the past year?

1. Date
2. Never
3. Don't know

56. What was the blood pressure value?

1. Values

a- Systolic BP:

b- Diastolic BP:

2. Don't know

3. N/A

57. How many times were you hospitalized for conditions related to hypertension in the past year?

1. Number of times:
2. Don't know
3. N/A

58. Were you exposed to any of the following complications? (Tick all that apply)

1. Heart disease
 - a- Myocardial infarction or heart attack
 - b- CABG – surgery
 - c- Percutaneous Coronary Intervention
2. Stroke
3. Peripheral Artery disease
 - a- Ulcers of the lower limbs (or toes)
 - b- Amputation of the lower limbs (or toes)
4. Diseases of the eye (retina)
5. Kidney disease
6. Thyroid problems

7. Other (specify):

59. Were you diagnosed with DM and/or HTN during these complications?

60. Did these complications happen in the past year?

G-Patient satisfaction and other factors affecting utilization

61. During the past year, when you needed health care for diabetes or hypertension did you get health care?

1. Always
2. Very Often
3. Sometimes
4. Rarely
5. Never

62. During the past year, did you visit this particular PHCC for the health care for diabetes or hypertension?

1. Always
2. Very Often
3. Sometimes
4. Rarely
5. Never

63. If you did not receive the health care, which reasons explain why you did not get health care? (tick all that apply)

- | | |
|--|--|
| 1. Cost | - A. Could not afford the cost of the visit |
| | - B. Could not afford the cost of transport |
| 2. Knowing where to go | - A. You did not know where to go |
| 3. Physical access | - A. No transport |
| | - B. No PHCC nearby? |
| | - C. Traffic |
| 4. Previous experience of receiving care | - A. The health care provider's drugs or equipment were inadequate |
| | - B. The health care provider's skills were inadequate |
| | - C. You were previously badly treated |
| 5. Could not take time off work or had other commitments | |
| 6. You thought you were not sick enough | |
| 7. You tried but were denied health care | |
| 8. Other | |

Now I would like to ask you about how important some notions are to you**Would you say it is:**

not important (1), slightly important (2), important (3), moderately important (4), very important (5) Skip (9)

64. How important is "respectful treatment" to you. (meaning: being shown respect when greeted by and when talking to health care providers and having physical examinations conducted in a way that respects your cultural norms)

65. How important is "confidentiality of personal information" to you. (meaning: having information about your health and other personal information kept confidential and having conversations with health care providers without other people overhearing)

66. How important is "convenient travel and short waiting times" to you. (meaning: having short travel times and convenient access to health care facilities and having short waiting times for consultations and hospital admissions)

67. How important is "choice of health care providers" to you. (meaning: being able to choose your health care provider (place or person) and being able to consult for a second opinion or with a specialist if so desired)

68. How important is "involvement in decision making" to you. (meaning: being involved as much as you want in deciding about your health care and freedom to discuss other treatment options or care regimes if you want)

69. How important are "good quality surroundings" to you? (meaning: having enough space, seating and fresh air in the waiting rooms, examination rooms and hospital wards and having a clean facility (including clean toilets))

70. How important is "contact with the outside world" to you? (meaning: having family and friends visit you as much as you want when you are a patient in hospital and being able to keep in contact with family and friends and to have information about what is happening outside the hospital)

71. How important is "clarity of communication" to you. (meaning: having the health care providers explain things in a way you can understand and having enough time to ask questions if you don't understand something)

Now I would like to ask you about the care you received**72. During the last year, which type of health provider have you seen most frequently?**

1. Medical doctor
2. Nurse
7. Other

73. How would you rate your satisfaction regarding:**Topic****During consultation**

1. Provider skills

Rating (1 lowest to 5 highest)

2. Being spoken to respectfully
3. Privacy during consultation
4. Explanations about treatment options and alternatives
5. Time availability for questions and clarifications
6. Clarity of explanations during consultation
7. Involvement in decision making your health and treatment (e.g. plan)
8. Confidentiality of your personal information
9. Availability of equipment
10. Condition of the equipment (e.g. cleanliness, functionality)
11. Availability of medicines
12. Examination room space
13. Examination room cleanliness

Facility

14. Waiting time for appointment scheduling
15. Waiting time in facility (for receiving services)
16. Waiting space (availability, crowdedness)
17. Facility cleanliness (including toilets)
18. Staff greetings
19. Provider choice (within the centre)
20. Provider choice (between clinics/facilities)

74. On average, per visit, how much did you or your household pay for (local currency): [Interviewer: only write 0 if the service was free. If a person did not have tests or drugs, circle "Not applicable, not have"]

- | | Amount | Don't know | Not applicable, not have |
|----------------------------------|--------|------------|--------------------------|
| 1. [Health care provider's] fees | | | |
| 2. Medicines | | | |
| 3. Tests | | | |
| 4. Transport | | | |
| 5. Other | | | |

75. Do you have any health coverage? (please tick what applies)

1. National Social Security Fund (NSSF)
2. Civil Servants Cooperative (CSC)
3. Military schemes
4. Private insurance
5. No health coverage

76. In the past year did you feel that you were treated worse by health care providers for any of the following reasons. Because of your:

- | | Yes | No |
|--------------------|-----|----|
| 1. Sex | | |
| 2. Age | | |
| 3. Lack of money | | |
| 4. Social class | | |
| 5. Type of illness | | |
| 6. Nationality | | |

