

Project Title

Predictors of E-Health acceptability among Singapore residents: Towards enhancing the efficiency and quality of diabetes care

Project Lead and Members

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Organisation(s) Involved

Institute of Mental Health, National Healthcare Group Polyclinics Hougang, Admiralty Medical Centre, National University of Singapore

Project Period

Start date: Feb 2019

Completed date: June-2020

Aims

The study aims to understand the acceptance and attitudes/perceptions of the general public towards E-Health for diabetes care. It will also examine the predictors of E-Health acceptability among Singapore residents

Background

Diabetes is one of the leading causes of morbidity and mortality among non-communicable diseases worldwide. Around 422 million people around the world (8.5%) are affected by diabetes with Southeast Asia being the 2nd largest cluster for diabetes worldwide. Singapore has a higher prevalence of diabetes than the global estimate with 11.3% of the population, (1 in 9 adults) suffering from diabetes. The number is predicted to reach 15% by 2050. Singapore has a rapidly aging population and a rising

rate of obesity both of which are risk factors for diabetes. Apart from shortening the lifespan, diabetes also carries the risk of multiple complications: 40% of stroke victims in Singapore had a diagnosis of diabetes, 66% of kidney failures and 50% of victims of heart attacks had a diagnosis of diabetes. The healthcare costs for diabetes is estimated to increase 3 –fold, from an estimated 787 million in 2010 to 1867 million by 2050. It is time to develop strategies that work within the finite healthcare resources to improve the quality and efficiency of diabetes care. E-Health is an evidence-based solution where healthcare services such as prescription of medicines, consultation, referrals, etc are delivered through the internet. It has been implemented and evaluated successfully in many countries. Many studies have shown patient satisfaction and efficient management of diabetes through E-health, when compared to face to face consultations. However, the acceptance by the public is key to the success of these services which depends on various factors such as attitude of the person, perceptions, previous experiences with similar platforms and sociodemographic characteristics. All these characteristics can vary among countries. Hence it is important to understand what the general public in Singapore thinks about E-health.

Methods

The data is derived from a national survey on diabetes knowledge, attitudes and perceptions conducted among randomly selected Singapore residents. Preliminary data based on 407 participants who answered an E-health questionnaire was analysed.

Results

The participants had a mean age of 48.2 years with an almost equal distribution in terms of gender (male 47.4%, female 52.6%) and ethnicity (Chinese 25.8%, Malay 34.9%, Indian 31.4% and others 7.9%). Majority had an education of secondary or below (50.1%), were employed (65.1%) and had an income of below 2000 per month (57.5%). Almost half (49.8%) reported that they were not ready for E-health yet. Among the respondents, a significantly higher percentage of diabetes patients said that they were not ready for E-health (71%) compared to less than half without

diabetes (45.9%). Almost 70% said that they might not use E-health for diabetes care which was similar for both the diabetes and non-diabetes groups. The preference of respondents for different types of healthcare services (consultation, prescription, referral, healthcare information, etc.) were explored. Majority preferred face to face sessions for consultation (87%), getting prescriptions (67%) and referrals to other clinicians (60%). People were more open to E-health for other services such as appointment booking and receiving of health information. Majority were aware that E-health saves time (78.5%), cost (70.1%) and is convenient (59.7%). However, some level of concerns regarding privacy and anonymity were highlighted. Major concerns highlighted included “no clinician patient rapport” (77.6%) and “requirement of computer literacy of the users” (89.4%). Some suspected the credibility of services delivered through E-health (60.2%). Half of them felt that it might not be useful for their specific condition (52.9%). Age, gender, education and income predicted e-health acceptability, with younger people, males, those of Malay ethnicity, higher education and higher income showing higher odds of E-health acceptance.

Lessons Learnt

The acceptance of E-health was moderate. Pilot programs that are aimed to create awareness of E-health services that deliver a pleasant E-health experience are needed amidst of concerns that are hindering the acceptance.

Conclusion

Moderate level of acceptance was observed towards E-health that can be improved. People highlighted advantages and serious concerns. Socio demographic predictors such as age, gender, education etc. predicted E-health acceptance. Measures to create awareness among the sociodemographic groups that are not yet accepting of E-health and addressing their concerns can improve the acceptance rates and facilitate the move towards a smarter healthcare system that offers better experience for our diabetes patients.

Additional Information

This is an unweighted analysis from an ongoing national survey. The study is funded by National Medical Research Council, Health Services Research Grant (NMRC/HSRG/0085/2018).

Project Category

Research

Keywords

Research, Health Services Research, E-Health, Institute of Mental Health, National Healthcare Group Polyclinics, Admiralty Medical Centre, Saw Swee Hock School of Public Health National University of Singapore, Acceptability, Readiness, Diabetes Care

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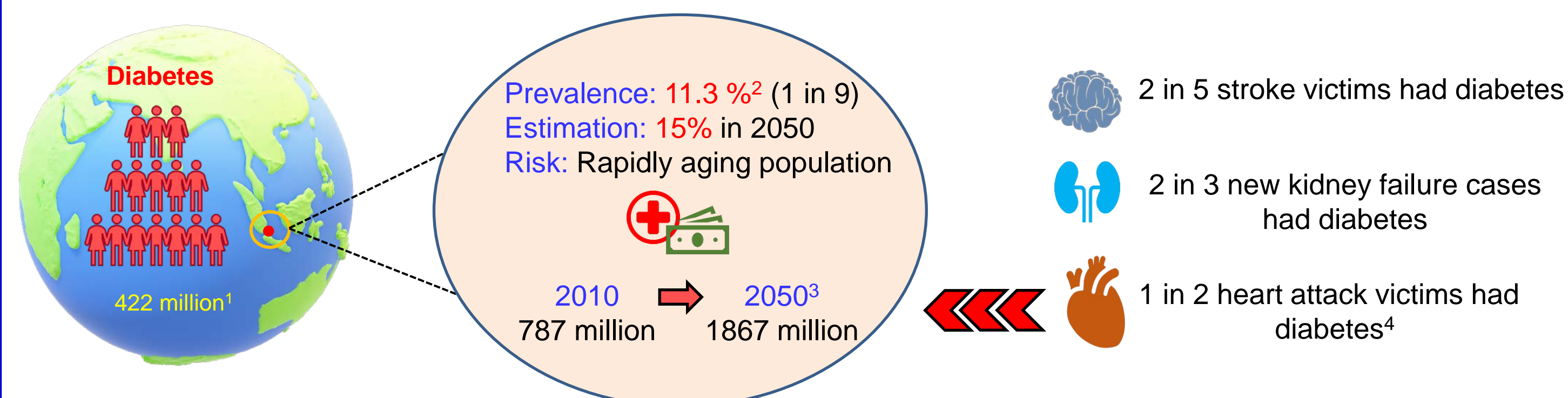
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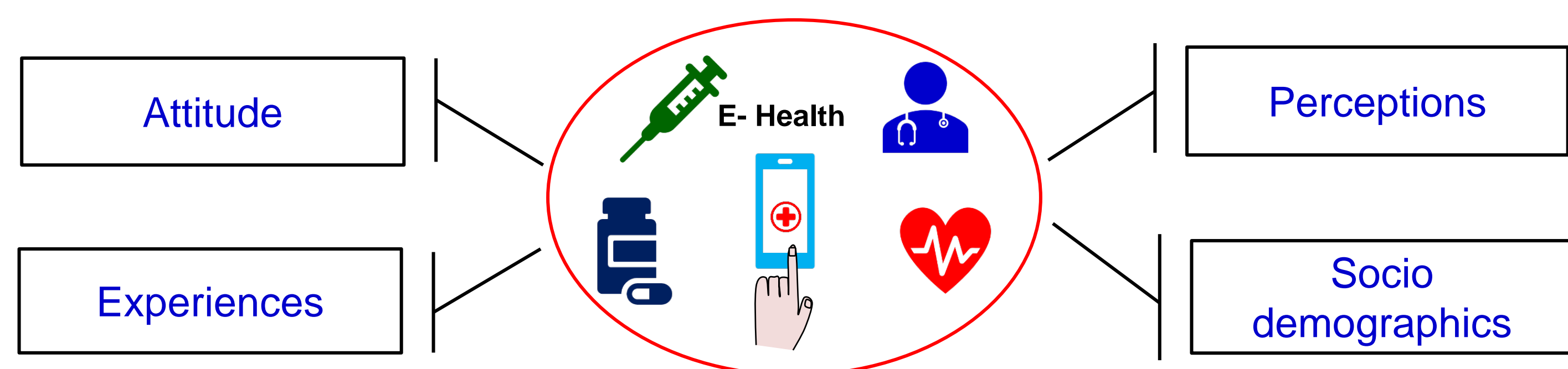
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BACKGROUND



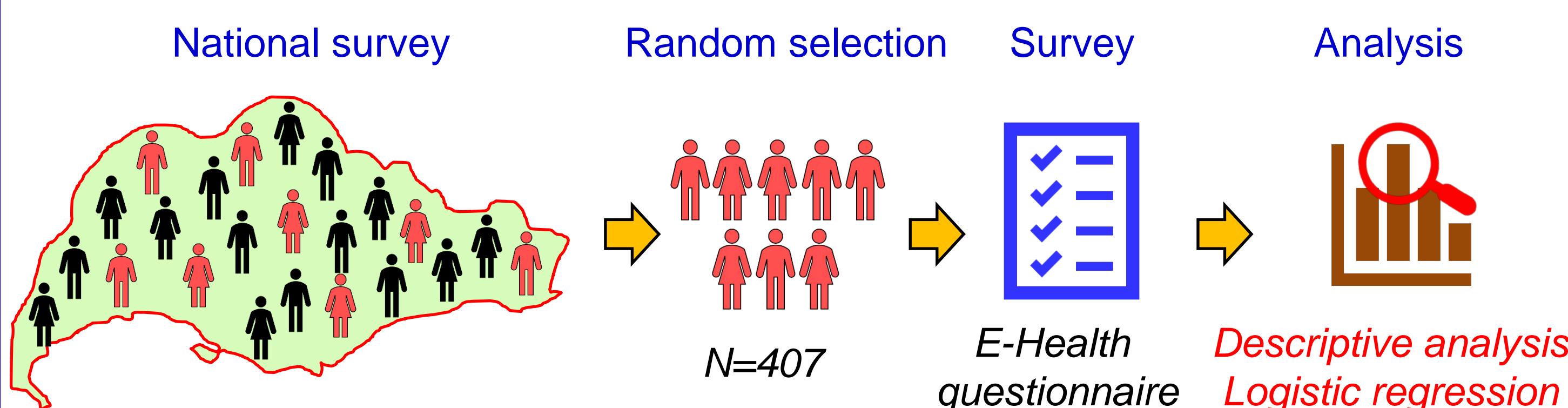
How can we improve the efficiency and quality of Health care services for diabetes?



Aims

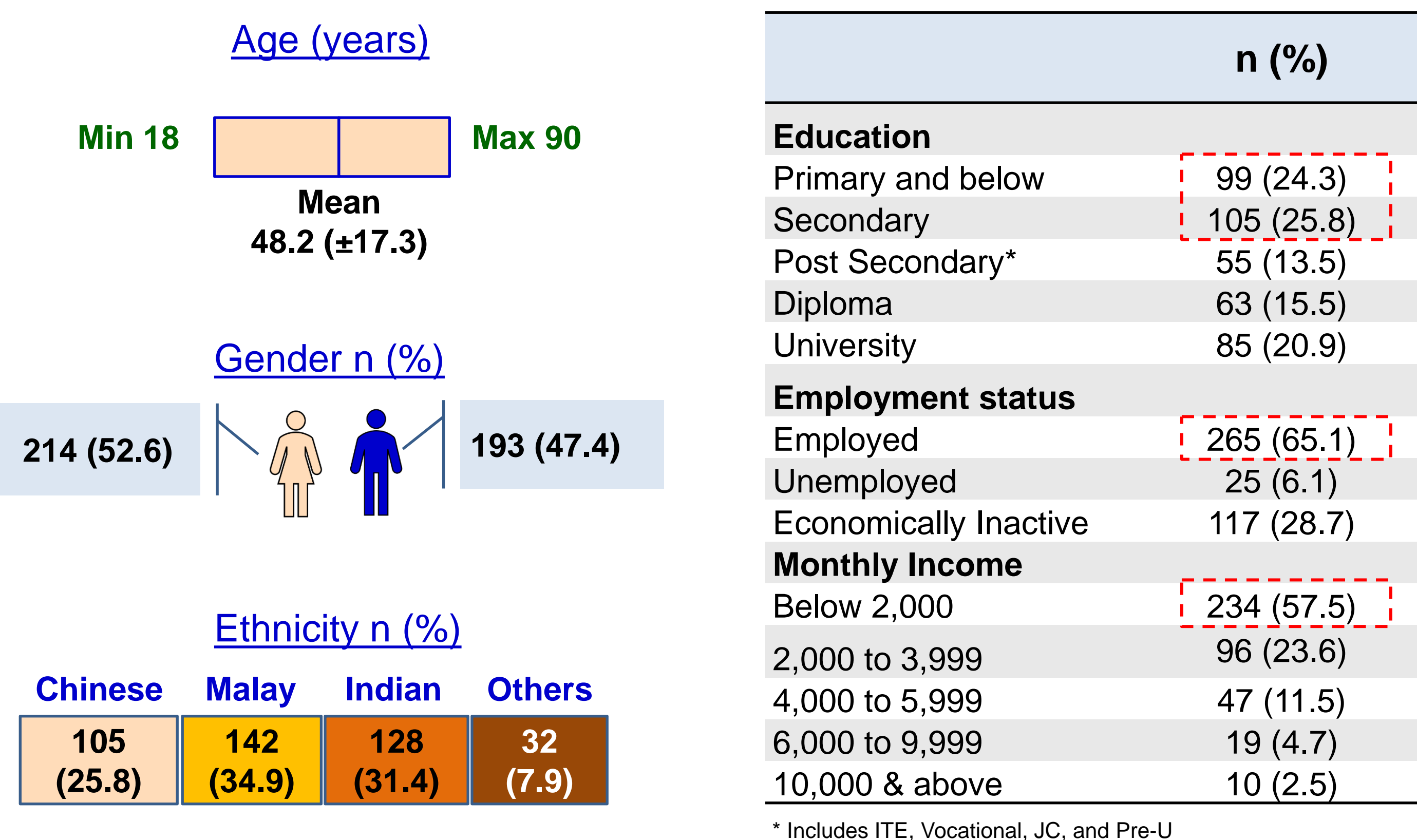
- ✓ To study the acceptance and attitudes/perceptions of general public towards E-Health for diabetes care
- ✓ To understand the predictors of E-Health acceptability

METHODS



RESULTS

1. Socio demographic information



2. Readiness for E-Health

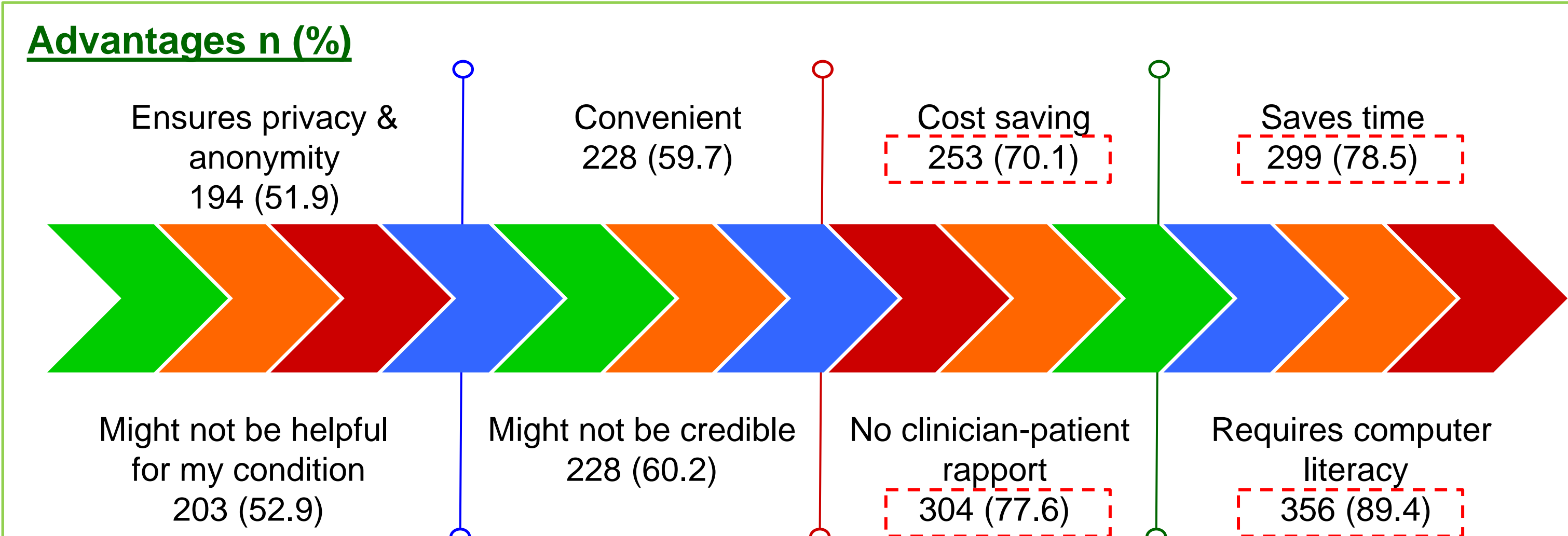
	Strongly agree/agree	Strongly disagree/disagree	Neutral
I am not ready for E-Health n (%)			
Overall	199 (49.8)	133 (33.3)	68 (17)
With diabetes (N=63)	44 (71)	14 (22.6)	4 (6.5)
Without diabetes (N=344)	155 (45.9)	119 (35.2)	64 (18.9)

RESULTS

3. Acceptability of E-Health for diabetes care

	Definitely would/possibly would	Definitely wouldn't/possibly wouldn't	Unsure
If you seek treatment for diabetes would you seek treatment through internet? n (%)			
Overall	94 (23.3)	280 (69.3)	30 (7.4)
With diabetes (N=63)	8 (12.7)	50 (79.4)	5 (7.9)
Without diabetes (N=344)	86 (25.2)	230 (67.4)	25 (7.3)
Which type of service would you use if you develop diabetes related problems? n (%)			
	Face to face	E-Health	Both
Consultation	348 (86.6)	5 (1.2)	49 (12.2)
Getting prescriptions	270 (67)	29 (7.2)	104 (25.8)
Referrals	243 (60.4)	48 (11.9)	111 (27.6)
Booking appointment	164 (40.7)	99 (24.6)	140 (34.7)
Health information	190 (47.3)	67 (16.7)	145 (36.1)

4. Perceived advantages/disadvantages of E-health for diabetes care



5. Predictors of E-health acceptability

	OR	95% CI		P-value
		Lower	Upper	
Age (years, Ref: 18 to 34)				
35 to 49	.78	.38	1.60	.49
50 to 64	.31	.14	.70	.00
65 and above	.22	.07	.62	.00
Gender (Ref: Female)				
Male	2.26	1.27	4.02	.00
Ethnicity (Ref: Chinese)				
Malay	2.22	1.05	4.68	.03
Indian	.59	.27	1.28	.18
Others	1.65	.60	4.51	.33
Education (Ref: Primary and below)				
Secondary School	2.49	.87	7.12	.08
PreU/JC	3.56	.77	16.45	.10
Vocational/ITE	2.60	.74	9.09	.13
Diploma	5.07	1.55	16.53	.00
University	7.34	2.11	25.50	.00
Employment (Ref: Employed)				
Economically inactive	1.65	.72	3.78	.23
Unemployed	2.87	.92	8.94	.06
Monthly Income (Ref: Below 2000)				
\$2,000 to \$3,999	.98	.45	2.13	.96
\$4,000 to \$5,999	.92	.34	2.49	.87
\$6,000 to \$9,999	.46	.11	1.96	.29
\$10,000 and above	5.88	1.05	33.13	.04

CONCLUSIONS

- ✓ Moderate levels of acceptance was observed towards E-Health
- ✓ Majority prefers face to face consultation for diabetes related problems
- ✓ Positive and negative attitudes towards the services were highlighted
- ✓ Socio demographic factors such as younger age, male gender, higher education and higher income predicted E-Health acceptance.
- ✓ Measures to address the concerns among specific sociodemographic groups might help to improve the acceptance among public