An Affordable, Usable and Sustainable Preventive Healthcare System for Unreached People in Bangladesh

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Introduction

Through aggressive IT development in medicine, health care in developing countries will possibly take a different path than advanced countries. We are conducted a pilot study of a preventive medical service combining e-health checkup and telemedicine in developing countries to evaluate stratification rules and short-term effects of the intervention prior to a large scale research study.

Methods

We provided e-health checkup in a village and in several companies in Bangladesh. Individual health condition was automatically categorized into 4 grades: Green (healthy), yellow (caution), orange (affected), and red (emergent) by international diagnosis standards of diseases. We provided telemedicine for orange and red, and tele-prescription for hypertensive patients. We rechecked orange and red subjects 2 months later.
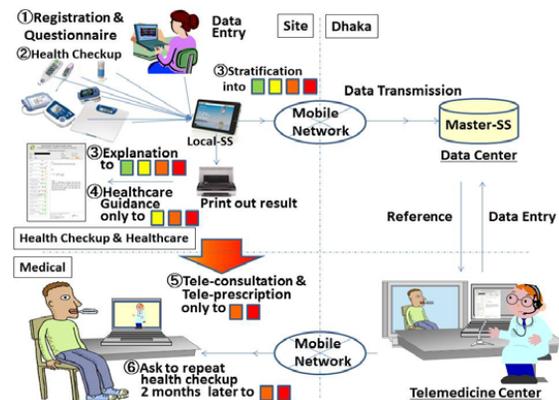

Figure 1 - Work flow (1-6) and data flow (arrow) in a visit

Results and Conclusions

The first checkup was provided to 791 subjects and categorized green15%, yellow66%, orange17%, and red3%. At the followup, 96 (62% of orange and red) were visited and categorized into green2%, yellow43%, orange43%, and red13%. The result shows the system's potency to deliver effective healthcare in developing countries. We completed 4919 first visits by November 2012. We will continue this e-health service in its second annual survey in June 2013 .

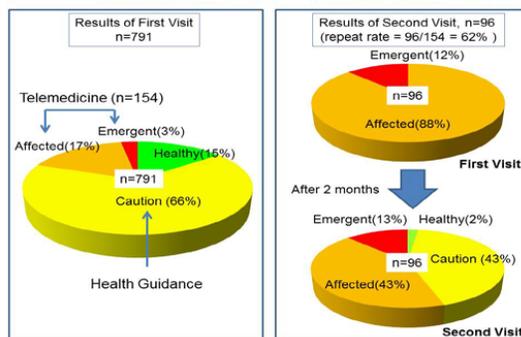| Color	First Visit (n=791)					Second Visit (n=96) Orange: 88% and Red: 12% in the First Visit				
	Green	Yellow	Orange	Red	total	Green	Yellow	Orange	Red	total
Waist	488	303	0	0	791	29	67	0	0	96
Waist Hip Ratio	229	562	0	0	791	10	86	0	0	96
BMI	525	233	31	2	791	48	29	17	2	96
Blood Pressure	551	173	55	12	791	47	31	13	5	96
Blood Glucose	731	39	13	8	791	78	10	3	5	96
u-Protein	462	302	27	0	791	30	55	11	0	96
u-Sugar	583	167	41	0	791	54	25	17	0	96
u-Urobillinogen	771	0	20	0	791	93	0	3	0	96
Pulse Rate	702	86	3	0	791	82	13	1	0	96
Arrythmia	790	0	1	0	791	96	0	0	0	96
Temperature	700	84	7	0	791	91	4	1	0	96
SpO2	747	40	3	1	791	96	0	0	0	96
Overall Result	116	521	132	22	791	2	41	41	12	96
	15%	66%	17%	3%	100%	2%	43%	43%	13%	100%

Figure 2 - Results of the pilot study

References

[1] Nakashima N, et al, IEEE EMBC2013 in press

[2] Ahmed A, Nakashima N et al, DAPI/HCII2013 in press

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