

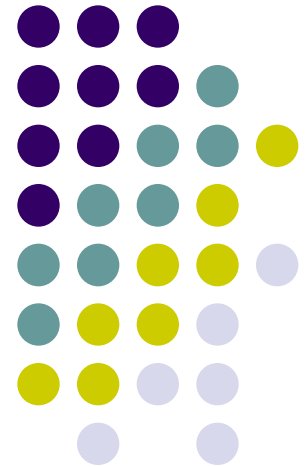
Evaluating the Health Effects of Micro Health Insurance Placement: Evidence from Bangladesh*

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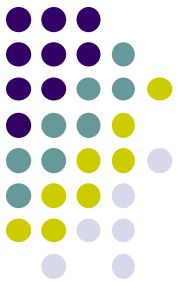
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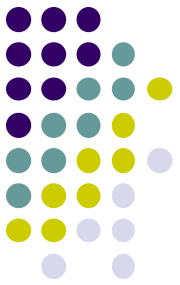
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Outline

- Why MHI?
- MHI scheme of GB
- Methodology
- Findings
- Conclusions





Why does Bangladesh need MHI?

- Absent of traditional health insurance markets
- Absent of social health insurance
- Government has largely failed to meet the health care needs of the rural poor.

An overview of GB MHI scheme



Mechanisms for providing health services

- Mainly through static clinics.

Categories of services covered

- Preventive care including antenatal care (ANC)
- Curative care (mainly outpatient care).
- All the basic diagnostic services including ultrasonography

Type of curative services provided

- Some health promotion activities
- Essential Services Package (ESP) including safe delivery.

Enrolment status

- Voluntary

Proof of enrolment

- Insurance card

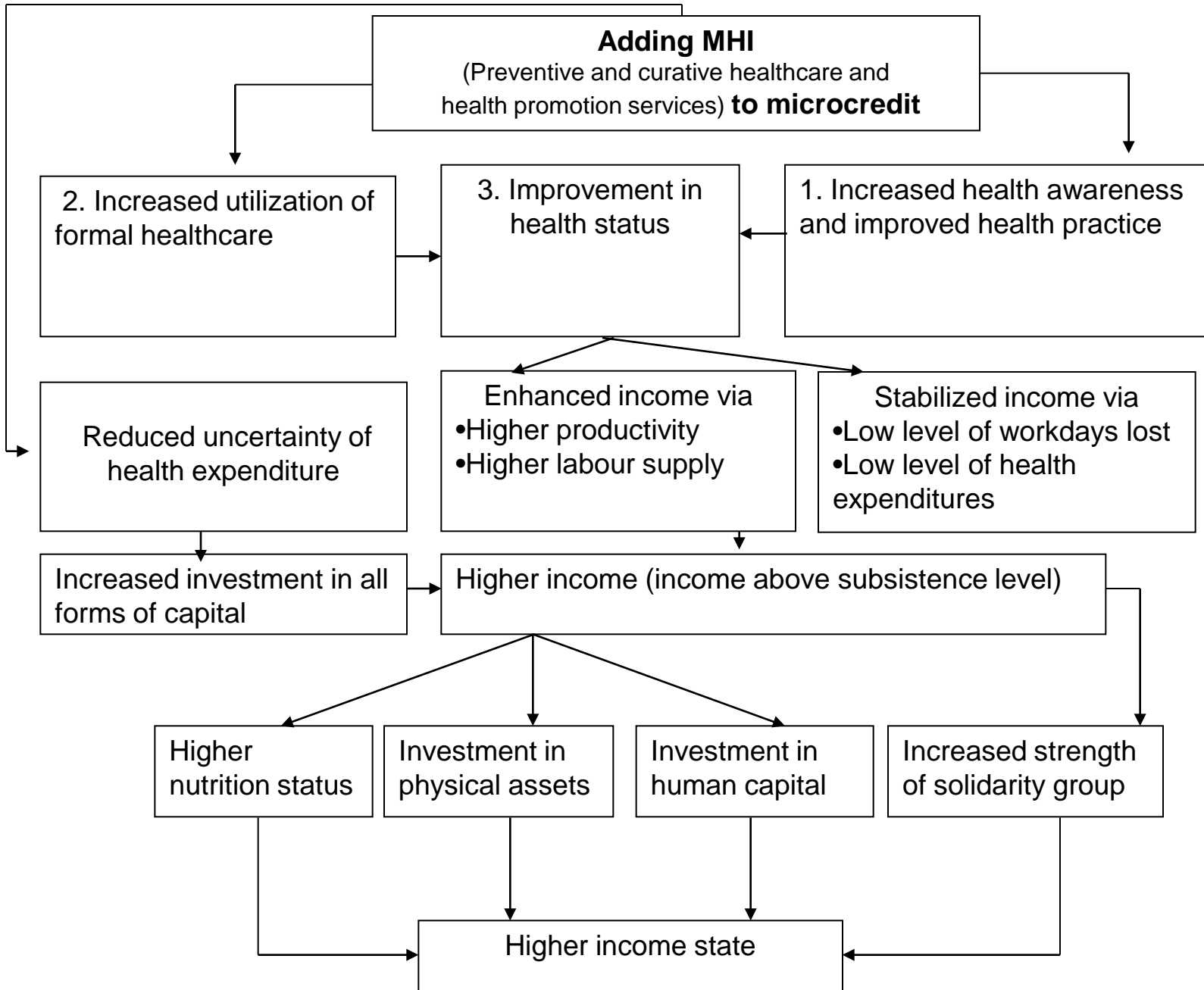
Affiliation unit

- Household. The program is identical for all enrolees (i.e. the same level of premium and the same benefit package is applicable for every household).

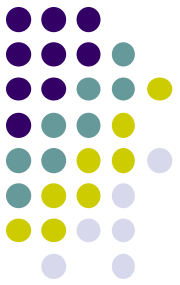
GB MHI scheme/cont.



- | | |
|--|---|
| Eligibility criterion | <ul style="list-style-type: none">● GB member households or any villagers living within an 8 km radius of each health centre. |
| Access of un-insured households to curative care | <ul style="list-style-type: none">● Yes |
| Premium | <ul style="list-style-type: none">● Annual premium (covering up to 6 members)<ul style="list-style-type: none">▪ For a GB member family: TK.120 (US \$1.74)▪ For a non member family: TK.150 (US \$2.17) |
| Benefit package for the card holders | <ul style="list-style-type: none">● Co-payment:<ul style="list-style-type: none">▪ Medical consultation fee for a card holder: TK.10 (US \$0.14)▪ Medical consultation fee for a non-card holder: TK.25 (US \$0.36)● Discount: Discount for basic medicine³ on MRP: 25%, for pathological tests on listed price: 30-35%, and for referred consultation visit: 50%. |



Data and study design



Study areas	Villages (MC centre)	No. of HH interviewed
▪ ≥ 5 years exp. of MHI (GB-1)	2 (4)	136
▪ ≤ 2 years exp. of MHI (GB-2)	2 (3)	85
▪ No MHI (GB-3)	2 (4)	108
▪ Total	6 (11)	329
▪ Response rate		73 %

Enrolment status in MHI



Membership status in MHI	GB	
	GB-1	GB-2
Insured	96.3 (131)	58.8 (50)
Uninsured	3.7 (5)	9.4 (8)
ME does not know	0 (0)	31.8 (27)
Total	100.0 (136)	100.0 (85)

Health awareness index



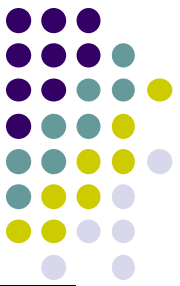
$$AD_i = \frac{d_i}{n_d}$$

$$AVA_i = \frac{v_i}{n_v}$$

$$AANC_i = \frac{anc_i}{n_{anc}}$$

$$PI_i = \frac{1}{3} \left[\frac{d_i}{n_d} + \frac{v_i}{n_v} + \frac{anc_i}{n_{anc}} \right]$$

Questions for health awareness



How can you treat diarrhoea? (Multiple responses are applicable)	What are the major natural sources of vitamin A? (Multiple responses are applicable)	What are the major signs that arise at the time of pregnancy, which are very dangerous to the mother? (Multiple responses are applicable)
<ol style="list-style-type: none">1. OR saline2. Solution of salt and sugar/gur3. Water of green coconut4. Melted rice5. Consult with doctor6. Do not know7. Others (specify)	<ol style="list-style-type: none">1. Carrot2. Sweet potato3. Sweet pumpkin4. Ripe papaya5. Ripe banana6. Molasses7. Amaranth leaves8. Do not know9. Other (specify)	<ol style="list-style-type: none">1. Severe headache and blurry vision2. Eclamsia3. Unsmooth delivery/ Delayed delivery4. Excessive bleeding5. High fever6. Do not know7. Others (specify)

Utilization of formal healthcare



- Type of healthcare received by acute or chronic diseased persons in the past eight weeks.
 - Type of healthcare:
 - informal
 - public provision
 - MHI
 - private
- Formal health care

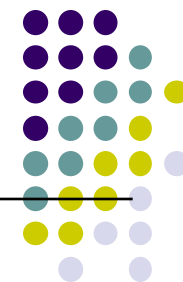
Health status



- Self-assessed (general) health (SAH) on a five point scale: excellent, good, fair, poor and very poor.
- Physical functioning index.

$$ADL = \frac{Score - MinScore}{MaxScore - MinScore}$$

Descriptive statistics: Health awareness



Different groups of GB members	Health awareness indices			
	AD diarrhoea	AVA Vitamin A	AANC Antenatal	Pooled index
GB1 (established MHI)	0.60(0.15) [136]	0.34(0.19) [136]	0.42(0.17) [136]	0.45(0.12) [136]
GB2 (new MHI)	0.36 (0.15) [85]	0.19 (0.14) [85]	0.20 (0.19) [85]	0.25(0.11) [85]
GB3 (without MHI)	0.39 (0.17) [108]	0.16 (0.16) [108]	0.16 (0.17) [108]	0.23(0.13) [108]
GB1 and GB2	0.51(0.19) [221]	0.28(0.19) [221]	0.33(0.21) [221]	0.37(0.15) [221]
Difference between GB1 and GB2	0.24***	0.16***	0.22***	0.20***
Difference between GB1 and GB3	0.21***	0.18***	0.26 ***	0.22***
Difference between GB2 and GB3	-0.03	0.03	0.04	0.02
Difference between GB with MHI (GB1 and GB2) and GB3	0.12***	0.12***	0.18***	0.14***

Healthcare utilization



Sources of Healthcare	Percentage distribution of households					
	GB1		GB2		GB3	
	%	n	%	n	%	n
Informal	29.6	24	63.6	28	75.4	43
Public	2.5	2	6.8	3	7.0	4
MHI	51.8	42	15.9	7	1.8	1
Private	16.1	13	13.6	6	15.8	9
Total	100	81	100	44	100	57

Healthcare utilization/Cont.



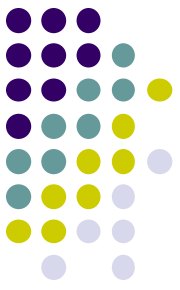
Proportional difference (in %) in the utilization of formal care

Difference between GB1
and GB2 34.01***

**Difference between GB1
and GB3 45.81*****

Difference between GB2
and GB3 11.80

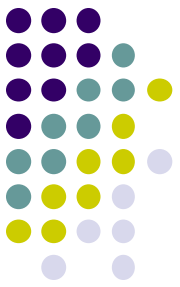
Health status



Mean ADL score and self-reported health status of the microentrepreneurs

Self-reported health status	Percentage distribution of households					
	GB1 (Established MHI)		GB2 (new MHI)		GB3 (no MHI)	
	%	n	%	n	%	n
Excellent	0.7	1	0	0	4.6	5
Good	57.4	78	38.8	33	45.4	49
Fair	25.7	35	34.1	29	17.6	19
Poor	16.2	22	25.9	22	28.7	31
Very poor	0	0	1.2	1	3.7	4
Total	100	136	100	85	100	108
Mean ADL score (st. dev)	0.88 (0.19)		0.81 (0.22)		0.82 (0.23)	

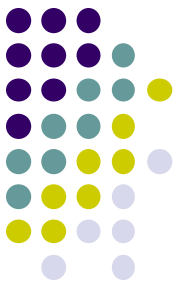
Health status/Cont.



Difference in mean ADL index and proportional difference in self reported health status

Proportional difference (in %)	Self-reported health status			Difference in mean ADL index
	Good	Fair	Poor	
Between GB1 and GB2	19.27*	-8.38	-10.88	0.07***
Between GB1 and GB3	8.09	8.15	-16.23	0.06**
Between GB2 & GB3	-11.18	16.53	-5.35	-0.01

Multivariate analysis: Estimating causal effects



- Model-1: Model for estimating the outcomes conditioning on participation

(Ekman, 2007; Msuya et al, 2007; Dror et al, 2006; Dror et al, 2005; Trujillo, 2005; Jutting, 2004; Jowett et al, 2004; Jowett et al, 2003; Trujillo, 2003; Yip and Berman, 2001; Waters, 1999)

- *Structural equation:*

$$y_{ij} = X_{ij} \beta_y + A_{ij} \delta + \varepsilon_{ij}$$

- *Reduced form (participation) equation:*

$$A_{ij} = X_{ij} \beta_A + Z_{ij} \phi + \mu_{ij}$$

Model-1/cont.



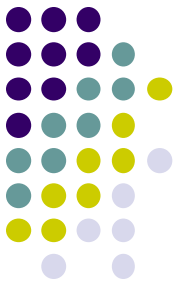
But this is not useful in our case: -

(a) very high enrolment rates

(b) spill over effects

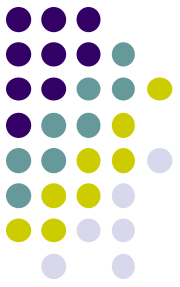
(c) GB offers health promotion services to all microcredit members (regardless of participation in MHI) in the catchment area of the health centre

Method/cont.



- Model-2: Model for estimating the outcomes conditioning on placement of program
 - compared the program group with a comparison group where program was in pipeline (Chase, 2002; Galasso and Ravallion, 2004)
 - compared the program group with a comparison group where program has not placed at the time of survey (Amin et al, 1996; Hadi, 2002)

Model-2: Conditioning on placement of program



$$y_{ij} = X_{ij}\beta + P_{ij}\lambda + \varepsilon_{ij}$$

$$P = 1$$

if the household is drawn from program area (GB-1) where MHI has been operated at least for five years

$$P = 0$$

if the household is drawn from the comparison area (GB-3) where MHI was not placed at the time of survey

Model-2: Major concern



- Program placement bias
 - Demand side factors
 - Supply side factors
- Geographical heterogeneity

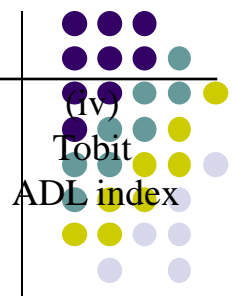
Model-2: How can we overcome the concern?



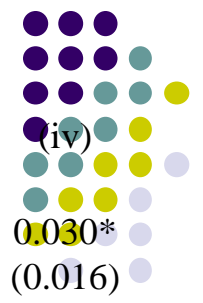
- Selection of GB-1 and GB-3 from the same small geographical boundary
- Choosing GB-3 where there is potential for placing the MHI
- Conducting a survey to know the willingness to be insured

Findings (Model-2)

Explanatory variables	(i) OLS estimation of health awareness (PI)	(ii) Probit Utilization of formal healthcare =1	(iii) Ordered probit self-rep. health (very poor = 0, poor =1, fair =2, good =3, excellent = 4)	(iv) Tobit ADL index
Age of microentrepreneur	-0.007 (0.006)	-	0.058 (0.050)	0.009 (0.016)
Squared age of microentrepreneur	0.0001 (0.0001)	-	-0.001* (0.001)	-0.0003 (0.0002)
Age of the diseased person	-	-0.023 (0.018)	-	-
Squared age of the diseased person	-	0.0003 (0.0002)	-	-
Sex of the diseased person (1= male)	-	-0.569** (0.266)	-	-
Marital status of microentrepreneur (1= married)	0.039 (0.035)	-	0.074 (0.297)	-0.014 (0.106)
Education of microentrepreneur or household head ⁽¹⁾	0.014*** (0.004)	0.076* (0.041)	0.012 (0.038)	-0.009 (0.011)
Chronic disease of the household member (1= yes)	-	0.533* (0.305)	-	-
Chronic disease of microentrepreneur (1= yes)	-	-	-0.351** (0.172)	-0.130** (0.057)
Duration of membership in microcredit program	0.002 (0.001)	0.040** (0.019)	-0.009 (0.013)	-0.003 (0.004)
Ownership of TV and Radio (1= yes)	0.036** (0.018)	-	-	-



Findings (Model-2)/Cont.



	(i)	(ii)	(iii)	(iv)
Per capita household income (100 USD =1 unit)	-	0.164** (0.078)	.076 (.047)	0.030* (0.016)
Literacy rate (percentage)	0.007 (0.005)	0.069 (0.067)	0.014 (0.052)	-0.009 (0.015)
MHI placement (1= yes, 0= no)	0.222*** (0.022)	1.402*** (0.321)	0.203 (0.204)	0.057 (0.067)
Constant	0.041 (0.241)	-3.907 (2.625)	-	1.315** (0.670)
Cut point 1	-	-	-1.918 (2.116)	-
Cut point 2	-	-	-0.383 (2.134)	-
Cut point 3	-	-	0.280 (2.133)	-
Cut point 4	-	-	2.455 (2.105)	-
Sigma	-	-	-	0.320 (0.023)
No. of observations	244	138	244	244
F-statistics /Wald chi ² / LR chi ²	31.58***	43.66***	32.95***	40.48***
R ² / Pseudo R ²	0.479	0.308	0.0456	-
Log pseudo likelihood/ Log likelihood	-	-66.196	-271.011	-112.476
RESET	F(3, 232) = 0.82 Prob > F = 0.486	chi2(1) = 0.23 Prob > chi2 = 0.628	chi2(1) = 0.18 Prob > chi2 = 0.669	F(1, 234) = 4.5 Prob > F = 0.968



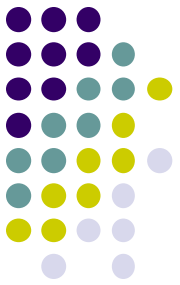
Limitations

- Use of cross section data for dynamic outcome
- The sample is not representative of the insured population
- Only measure the health status of microentrepreneur, and not the health status of all the members in the households

Conclusions



- Positive association of MHI with all the health indicators
- Statistically significant association with HA and utilization of formal care, but not with health status
 - lack of proper referral services
 - adverse effects of protection against moral hazard
- One possible suggestion is for government to contract out its poorly functioning health centres to the existing micro insurers.



Thank you!
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