

Supplementary information

Additional file 1: Figures S1-S3, Tables S1-S7. Fig S1: Histogram of HH distances to PHCs and medicine shops. Fig S2: Model for any care sought for adults. Figure S3: Model for type of care sought for adults. Table S1: Self-reported medical history. Table S2: Prevalence of past fever and diarrhoea among symptomatic participants across the study districts. Table S3: Care-seeking behaviour across study districts. Table S4: HH characteristics. Table S5: Characteristics of adults. Table S6: HH distances to PHCs and medicine shops by district. Table S7: Reported final diagnoses from government health centres.

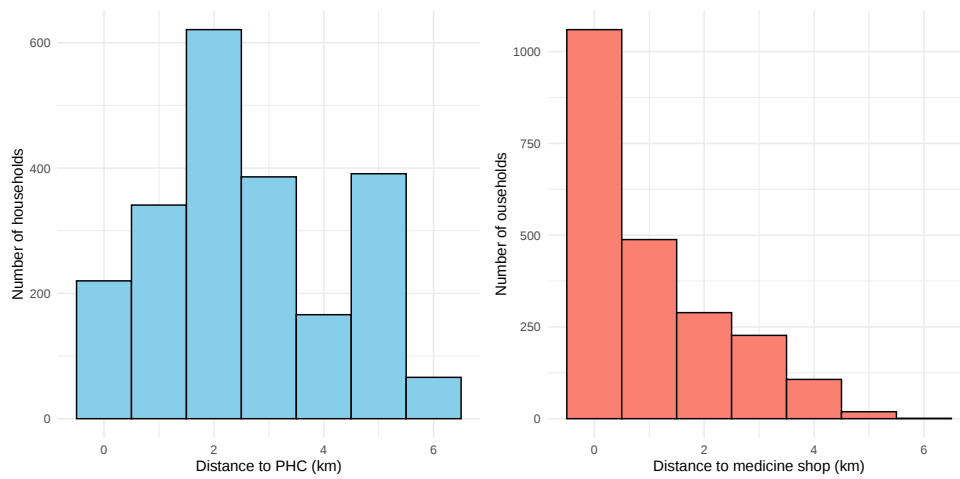


Fig. S1 Histogram of HH distances to PHCs and medicine shops.

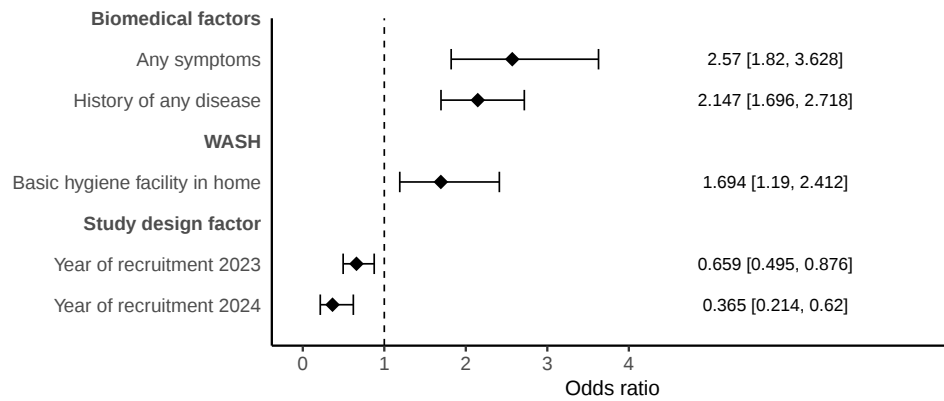


Fig. S2 Model for any care sought for adults. Multilevel model for any care sought for individuals aged 20 and above ($n = 3780$) with random effects at the village and HH levels. VIFs<10 for all covariates, and AUC for 10-fold cross-validation was 0.656.

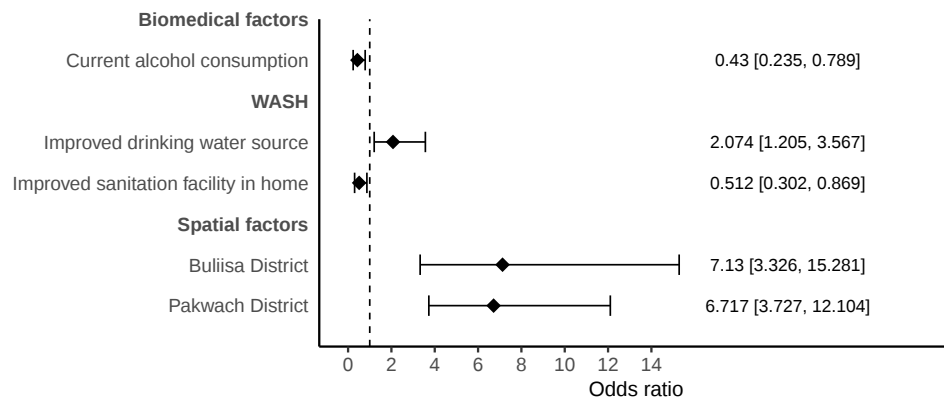


Fig. S3 Model for type of care sought for adults. Logistic regression model for the type of care sought for individuals aged 20 and above who sought care ($n = 420$) with 95% CIs calculated using clustered standard errors at the HH level. VIFs<10 for all covariates, and AUC for 10-fold cross-validation was 0.745.

Table S1 Self-reported medical history.

	Total	Care seeking	Not care seeking
	(N=8038)	(N=659)	(N=7379)
HISTORY OF INFECTIOUS DISEASES			
Uncomplicated malaria	1642 (20.4%)	216 (32.8%)	1426 (19.3%)
Complicated malaria	507 (6.3%)	84 (12.7%)	423 (5.7%)
Encephalitis	108 (1.3%)	15 (2.3%)	93 (1.3%)
Pneumonia	207 (2.6%)	36 (5.5%)	171 (2.3%)
Pertussis	679 (8.4%)	73 (11.1%)	606 (8.2%)
Scabies	135 (1.7%)	19 (2.9%)	116 (1.6%)
Tetanus	33 (0.4%)	2 (0.3%)	31 (0.4%)
Typhoid	1306 (16.2%)	165 (25.0%)	1141 (15.5%)
Cholera	625 (7.8%)	63 (9.6%)	562 (7.6%)
Dysentery	339 (4.2%)	45 (6.8%)	294 (4.0%)
Diarrhoea	608 (7.6%)	65 (9.9%)	543 (7.4%)
Tuberculosis	65 (0.8%)	17 (2.6%)	48 (0.7%)
Meningitis	33 (0.4%)	7 (1.1%)	26 (0.4%)
Hepatitis B	41 (0.5%)	5 (0.8%)	36 (0.5%)
Hepatitis C	17 (0.2%)	2 (0.3%)	15 (0.2%)
Measles	45 (0.6%)	12 (1.8%)	33 (0.4%)
HIV	127 (1.6%)	20 (3.0%)	107 (1.5%)
Sepsis	62 (0.8%)	6 (0.9%)	56 (0.8%)
Leprosy	28 (0.3%)	2 (0.3%)	26 (0.4%)
Brucellosis	27 (0.3%)	4 (0.6%)	23 (0.3%)
Gut worms	952 (11.8%)	129 (19.6%)	823 (11.2%)
Bilharzia	330 (4.1%)	58 (8.8%)	272 (3.7%)
Trachoma	285 (3.5%)	47 (7.1%)	238 (3.2%)
Hemorrhagic fever	49 (0.6%)	6 (0.9%)	43 (0.6%)
COVID	19 (0.2%)	2 (0.3%)	17 (0.2%)
HISTORY OF NON-COMMUNICABLE DISEASES			
Epilepsy	55 (0.7%)	8 (1.2%)	47 (0.6%)
Sickle cell disease	49 (0.6%)	9 (1.4%)	40 (0.5%)
Anaemia	93 (1.2%)	14 (2.1%)	79 (1.1%)
Liver disease	180 (2.2%)	25 (3.8%)	155 (2.1%)
Kidney disease	58 (0.7%)	13 (2.0%)	45 (0.6%)
Asthma	152 (1.9%)	19 (2.9%)	133 (1.8%)
Eczema	752 (9.4%)	68 (10.3%)	684 (9.3%)
Cancer	41 (0.5%)	6 (0.9%)	35 (0.5%)
Depression	102 (1.3%)	22 (3.3%)	80 (1.1%)
Anxiety	82 (1.0%)	13 (2.0%)	69 (0.9%)
Psychosis	17 (0.2%)	3 (0.5%)	14 (0.2%)

Table S2 Prevalence of past fever and diarrhoea among symptomatic participants across the study districts.

Past symptom reported	Total	Pakwach	Buliisa	Mayuge	<i>p</i> -value ^a
	(N=285)	(N=224)	(N=50)	(N=11)	
Fever	16 (5.6%)	11 (4.9%)	5 (10%)	0 (0.0%)	0.52
Diarrhoea	27 (9.5%)	20 (8.9%)	7 (14%)	0 (0.0%)	0.82

^a *p*-values were calculated using Rao-Scott second-order corrected chi-square tests to account for HH and village-level clustering.

Table S3 Care-seeking behaviour across study districts.

	Overall	Pakwach	Buliisa	Mayuge	<i>p</i> -value ^a
Individual level	(N=8038)	(N=3313)	(N=2455)	(N=2270)	
Care seeking	659 (8.2%)	316 (9.5%)	151 (6.2%)	192 (8.5%)	0.258
Govt. health centre ^b	(n=659)	(n=316)	(n=151)	(n=192)	
	445 (67.5%)	254 (80.4%)	123 (81.5%)	68 (35.4%)	<0.001
Usual source of care by HHs	(N=2191)	(N=897)	(N=745)	(N=549)	
Govt. health centre	1858 (84.8%)	800 (89.2%)	689 (92.5%)	369 (67.2%)	<0.001
Private clinic	252 (11.5%)	28 (3.1%)	49 (6.6%)	175 (31.9%)	
Local medicine shop	37 (1.7%)	27 (3.0%)	6 (0.8%)	4 (0.7%)	
VHT	44 (2%)	42 (4.7%)	1 (0.1%)	1 (0.2%)	

^a *p*-values were calculated using Rao-Scott second-order corrected chi-square tests to account for HH and village-level clustering.

^b This is among participants who reported seeking care in the month before recruitment.

Table S4 HH characteristics.

	Total (N=2191)	HH health care other (N=289)	HH health care PHC (N=1902)
HH HEALTH			
History of IDs	1470 (67.1%)	194 (67.1%)	1276 (67.1%)
History of NCDs	895 (40.8%)	103 (35.6%)	792 (41.6%)
History of any disease	1601 (73.1%)	213 (73.7%)	1388 (73.0%)
SOCIODEMOGRAPHICS			
Highest level of education attained of HH head			
Mean (SD)	4.66 (3.31)	4.90 (3.20)	4.62 (3.33)
Occupation of HH head			
Farmer	571 (26.1%)	85 (29.4%)	486 (25.6%)
Fisherman	541 (24.7%)	81 (28.0%)	460 (24.2%)
Fishmonger	107 (4.9%)	9 (3.1%)	98 (5.2%)
None/Other	972 (44.4%)	114 (39.4%)	858 (45.1%)
Home quality score			
Mean (SD)	5.76 (3.44)	7.37 (3.58)	5.52 (3.35)
HH social status	257 (11.7%)	24 (8.3%)	233 (12.3%)
Number of individuals in HH			
Mean (SD)	3.66 (1.46)	3.92 (1.40)	3.62 (1.46)
Deaths in HH (past 3 yrs)	161 (7.3%)	19 (6.6%)	142 (7.5%)
Years HH has lived in village			
Mean (SD)	20.0 (15.6)	20.3 (14.4)	20.0 (15.8)
Home owned	1898 (86.6%)	252 (87.2%)	1646 (86.5%)
Number of rooms			
Mean (SD)	2.14 (1.17)	2.17 (1.06)	2.14 (1.18)
WATER, SANITATION AND HYGIENE (WASH)			
Improved drinking water source	1184 (54.0%)	141 (48.8%)	1043 (54.8%)
HH treats drinking water	489 (22.3%)	74 (25.6%)	415 (21.8%)
Improved sanitation facility in home	1253 (57.2%)	192 (66.4%)	1061 (55.8%)
Basic hygiene facility in home	183 (8.4%)	32 (11.1%)	151 (7.9%)
SPATIAL FACTORS			
Min. dist. (km) to drug shop			
Mean (SD)	1.11 (1.22)	0.618 (0.912)	1.19 (1.24)
Min. dist. (km) to gov't. health centre			
Mean (SD)	2.62 (1.60)	3.34 (1.68)	2.51 (1.56)
District			
Buliisa	745 (34.0%)	55 (19.0%)	690 (36.3%)
Mayuge	549 (25.1%)	179 (61.9%)	370 (19.5%)
Pakwach	897 (40.9%)	55 (19.0%)	842 (44.3%)
STUDY DESIGN FACTOR			
Year of recruitment			
2022	1459 (66.6%)	267 (92.4%)	1192 (62.7%)
2023	493 (22.5%)	11 (3.8%)	482 (25.3%)
2024	239 (10.9%)	11 (3.8%)	228 (12.0%)

Table S5 Characteristics of adults.

	Total (N=3780)	Care seeking (N=420)	Not care seeking (N=3360)
BIOMEDICAL FACTORS			
Any symptoms	232 (6.1%)	59 (14.0%)	173 (5.1%)
IDs for other HH members	2299 (60.8%)	295 (70.2%)	2004 (59.6%)
NCDs for other HH members	1210 (32.0%)	151 (36.0%)	1059 (31.5%)
History of IDs	1880 (49.7%)	265 (63.1%)	1615 (48.1%)
History of NCDs	944 (25.0%)	151 (36.0%)	793 (23.6%)
History of any disease	2094 (55.4%)	305 (72.6%)	1789 (53.2%)
Current alcohol consumption	616 (16.3%)	76 (18.1%)	540 (16.1%)
Current smoker	445 (11.8%)	51 (12.1%)	394 (11.7%)
SOCIODEMOGRAPHICS			
Age			
Mean (SD)	38.9 (13.4)	40.9 (14.5)	38.7 (13.2)
Sex - Female	2131 (56.4%)	256 (61.0%)	1875 (55.8%)
Majority tribe	2838 (75.1%)	331 (78.8%)	2507 (74.6%)
Majority religion	2796 (74.0%)	312 (74.3%)	2484 (73.9%)
Highest level of education attained			
Mean (SD)	4.57 (3.26)	4.41 (3.23)	4.59 (3.26)
Occupation			
Farmer	1108 (29.3%)	137 (32.6%)	971 (28.9%)
Fisherman	589 (15.6%)	58 (13.8%)	531 (15.8%)
Fishmonger	218 (5.8%)	30 (7.1%)	188 (5.6%)
None/Other	1865 (49.3%)	195 (46.4%)	1670 (49.7%)
Home quality score			
Mean (SD)	5.88 (3.49)	5.90 (3.55)	5.88 (3.48)
HH social status	498 (13.2%)	50 (11.9%)	448 (13.3%)
Number of individuals in HH			
Mean (SD)	3.94 (1.56)	3.77 (1.66)	3.96 (1.54)
Deaths in HH (past 3 yrs)	299 (7.9%)	52 (12.4%)	247 (7.4%)
Years HH has lived in village			
Mean (SD)	20.2 (15.4)	21.5 (15.6)	20.0 (15.4)
Home owned	3295 (87.2%)	363 (86.4%)	2932 (87.3%)
Number of rooms			
Mean (SD)	2.21 (1.22)	2.25 (1.44)	2.21 (1.18)
WATER, SANITATION AND HYGIENE (WASH)			
Improved drinking water source	2059 (54.5%)	253 (60.2%)	1806 (53.8%)
HH treats drinking water	863 (22.8%)	120 (28.6%)	743 (22.1%)
Improved sanitation facility in home	2227 (58.9%)	227 (54.0%)	2000 (59.5%)
Basic hygiene facility in home	346 (9.2%)	61 (14.5%)	285 (8.5%)
SPATIAL FACTORS			
Min. dist. (km) to drug shop			
Mean (SD)	1.09 (1.20)	1.26 (1.23)	1.07 (1.19)
Min. dist. (km) to gov't. health centre			
Mean (SD)	2.65 (1.62)	2.63 (1.63)	2.65 (1.61)
District			
Buliisa	1225 (32.4%)	94 (22.4%)	1131 (33.7%)
Mayuge	1004 (26.6%)	116 (27.6%)	888 (26.4%)
Pakwach	1551 (41.0%)	210 (50.0%)	1341 (39.9%)
STUDY DESIGN FACTOR			
Year of recruitment			
2022	2538 (67.1%)	324 (77.1%)	2214 (65.9%)
2023	823 (21.8%)	78 (18.6%)	745 (22.2%)
2024	419 (11.1%)	18 (4.3%)	401 (11.9%)

Table S6 HH distances to PHCs and medicine shops by district.

District	Number of HHs	Median distance to PHC (km)	Percentage of HHs within 5km of a PHC	Median distance to medicine shop (km)	Percentage of HHs within 5km of a medicine shop
Pakwach	897	2.41 (1.75-4.57)	87.1	0.9 (0.33-2.23)	100
Buliisa	745	2.5 (0.6-3.02)	100	0.34 (0.13-3.04)	98.4
Mayuge	549	2.05 (1.26-4.86)	75.2	0.18 (0.08-0.4)	100

Table S7 Reported final diagnoses from government health centres. The categories are not mutually exclusive as some individuals may have had more than one diagnosis. Percentages were computed against a total of 341 individuals who had non-missing information on final diagnoses from government health centres.

Symptom	Count	Percentage
Malaria	195	57.18
Other	25	7.33
Pregnancy-related	17	4.99
Headache	9	2.64
Ulcer	8	2.35
Cough	7	2.05
HIV	7	2.05
Typhoid	5	1.47
Abdominal pain	5	1.47
Flu	4	1.17
Epilepsy	3	0.88
AIDS	3	0.88
Asthma	3	0.88
Tuberculosis	3	0.88
Worms	3	0.88
Dental problem	2	0.59
Kidney failure	2	0.59
Diabetes	2	0.59
Fever	2	0.59
Stomach pain	2	0.59
Allergy	2	0.59
Sickle cell	2	0.59
Syphilis	2	0.59
Traumatic brain injury	1	0.29
Yellow fever	1	0.29
Appendicitis	1	0.29
Splenomegaly	1	0.29
Mental disorder	1	0.29
Vomiting blood	1	0.29
Anaemia	1	0.29
Hepatitis B	1	0.29
Thoracic disease	1	0.29
Ophthalmic disease	1	0.29
Anemia	1	0.29
Dysentery	1	0.29
Respiratory tract infections	1	0.29
Wounds	1	0.29
Skin rashes	1	0.29
Back pain	1	0.29
Hypertension	1	0.29
Heart attack	1	0.29
Bilharzia	1	0.29
Haematuria	1	0.29
Intestinal operation	1	0.29
Measles	1	0.29
Hernia	1	0.29
Liver enlargement	1	0.29
Spleen enlargement	1	0.29
Uterus problem	1	0.29
General health check	1	0.29
Chest pain	1	0.29