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Acceptability and Perceived Barriers to Reactive Focal Mass Drug Administration in the Context of a Malaria Elimination Program in Magude district, Southern Mozambique: A qualitative study --Manuscript Draft--

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Full Title:	Acceptability and Perceived Barriers to Reactive Focal Mass Drug Administration in the Context of a Malaria Elimination Program in Magude district, Southern Mozambique: A qualitative study
Short Title:	Acceptability and Barriers to Reactive Focal Drug Administration in Mozambique
Corresponding Author:	Carlos Eduardo Cuinhane, PhD Eduardo Mondlane University: Universidade Eduardo Mondlane Maputo, Maputo MOZAMBIQUE
Keywords:	Acceptability, Barriers, Magude, Malaria, Reactive focal mass drug administration.
Abstract:	This study analysed acceptability and perceived barriers to reactive focal mass drug administration (rfMDA) among community members exposed to community engagement campaigns and malaria elimination interventions in Magude district, following mass drug administration (MDA) in the same district. The study used a formative qualitative study design consisting of 56 semi-structured interviews with community members, including community leaders, household heads, women of reproductive age, members of the community and adolescents, 4 semi-structured interviews with community health workers, 9 semi-structured healthcare professionals; and 16 focus group discussions with adult general population. A content thematic analysis approach was used to analyse the data. The results of this study showed that rfMDA was accepted due to awareness about the intervention, experience of previous similar programme, such as MDA, and due to favourable perceptions built on the believe that rfMDA would help to prevent, treat and eliminate malaria in the community. Perceived barriers to rfMDA include lack of access to accurate information, reluctance to take pregnancy test, concern on drug adverse reactions, and reluctance to take antimalarial drugs without any symptom. In conclusion, the community found rfMDA acceptable for malaria intervention. But more community engagement is need to foster community involvement and self-appropriation of the malaria programme elimination.
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Opposed Reviewers:	Harvie P Portugaliza, PhD Lecturer and researcher, Visayas State University harvie.portugaliza@isglobal.org The proposed researcher has developed research on malaria in low middle income countries, and we think he is in a better position to analyze the manuscript. Christopher Pell, PhD Researcher, University of Amsterdam

	<p>The proposed reviewer is a researcher in cultural factors influencing malaria treatment intake in Africa.</p>
<p>Response to Reviewers:</p>	<p>Subject: Submission of the revised manuscript [PONE-D-22-12696]</p> <p>Dear academic editor and reviewers,</p> <p>Thank you for reviewing the manuscript “Acceptability and perceived barriers to reactive focal mass drug administration in the context of a malaria elimination program in Magude district, Southern Mozambique: A qualitative study”. The authors of this manuscript have read the current Instructions for Authors, and agreed to accept the recommended format. The new manuscript version reflects the recommended format. All authors have also read and agreed upon the submitted version of this manuscript. We believe that the new manuscript will now be suitable for publication format in the PLOS ONE journal.</p> <p>To academic editor:</p> <p>1. Please ensure that your manuscript meets PLOS ONE's style requirements, including those for file naming. The PLOS ONE style templates can be found at https://journals.plos.org/plosone/s/file?id=wjVg/PLOSONe_formatting_sample_main_body.pdf and https://journals.plos.org/plosone/s/file?id=ba62/PLOSONe_formatting_sample_title_authors_affiliations.pdf</p> <p>Answer: We followed the recommended format and we used the PLOS ONE templates to revise the manuscript. The new manuscript reflects the recommended format.</p> <p>2. You indicated that you had ethical approval for your study. In your Methods section, please ensure you have also stated whether you obtained consent from parents or guardians of the minors included in the study or whether the research ethics committee or IRB specifically waived the need for their consent.</p> <p>Answer: The research protocol was approved by local and national IRB, namely CISM's institutional ethics committee (CIBS-CISM) and the Mozambican Ministry of Health National Bioethics Committee, and a consent was obtained from parents and guardians of the minor included in the study. In addition, an assent was obtained from the young adolescents that participated in the study. This information was now added in the Methods section, particularly in the ethical consideration section of the new manuscript version. In addition, Table 1 was reformulated for better reading of the presented data.</p> <p>3. Data availability</p> <p>We agree and we support the policy of data availability, and we recognize the advantages of data availability. We have read PLOS ONE policy and we think that it is very important to share the data publicly. However, the qualitative data used to develop this manuscript involve human discourses, and therefore, there is ethical and legal restrictions to sharing the data publicly. The ethical and legal restrictions derive from the fact that the protocol and the informed consent and assent approved by the two ethical review boards referred that the data would only be available to the study team, and the protocol established that all information would be confidential. Thus, no participant of the study was informed that the data would be made publicly. Despite this restriction, the data of this study may be available to all researchers upon request to IRBs. In this regard, we would like to update our statement of data availability to as follows:</p> <p>Data Availability: The data of this study were collected under individual-level informed consent and assent after a research protocol was reviewed and approved by CISM's institutional ethics committee (CIBS-CISM) and the Mozambican Ministry of Health National Bioethics Committee. The informed consent signed by the participants stated that: “data will only be available to the study team”, and the protocol established that all information will be confidential, and no data from the data collection forms, nor from audio files will be accessible to anyone outside of CISM. Given this statement approved by the two IRBs, data from this study is available upon request to these institutional review boards: CISM's institutional ethics committee (sozinho.acacio@manhica.net) or the Mozambican Ministry of Health National Bioethics Committee (jflschwabach@gmail.com) for researchers who meet the criteria for access to confidential data.</p>

	<p>4. We note that you have indicated that data from this study are available upon request. PLOS only allows data to be available upon request if there are legal or ethical restrictions on sharing data publicly. For more information on unacceptable data access restrictions, please see http://journals.plos.org/plosone/s/data-availability#loc-unacceptable-data-access-restrictions.</p> <p>Answer: The answer for this question was already provided in question 3.</p> <p>5. "PLOS requires an ORCID iD for the corresponding author in Editorial Manager on papers submitted after December 6th, 2016. Please ensure that you have an ORCID iD and that it is validated in Editorial Manager.</p> <p>Answer: The correspondent author already has an ORCID iD, which is 0000-0002-6871-1218. I update this ORCID iD in Editorial Manager page, in Update my information, as recommended.</p> <p>6. Please include captions for your Supporting Information files at the end of your manuscript, and update any in-text citations to match accordingly. Please see our Supporting Information guidelines for more information: http://journals.plos.org/plosone/s/supporting-information.</p> <p>Answer: The captions were included for the supporting information as recommended. The supported information include the intergiew guides used for data collection (in both Portuguese and English) and Table COREQ. It does not include tables or data mentioned in the manuscript.</p>
Additional Information:	
Question	Response
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- Indicate the form of consent obtained (written/oral) or the reason that consent was not obtained (e.g. the data were analyzed anonymously)

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- Provide the name of the Institutional Animal Care and Use Committee (IACUC) or other relevant ethics board that reviewed the study protocol, and indicate whether they approved this research or granted a formal waiver of ethical approval
- Include an approval number if one was obtained
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- If anesthesia, euthanasia, or any kind of animal sacrifice is part of the study, include briefly which substances and/or methods were applied

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Additional data availability information:

Centro de Investigação da Manhiça
Manhiça District, Maputo Province,
Mozambique

30th April 2022

Dear Editor,

We wish to submit an original article entitled “*Acceptability and Perceived Barriers to Reactive Focal Mass Drug Administration in the Context of a Malaria Elimination Program in Magude district, Southern Mozambique: A qualitative study*” for consideration by the PLOS ONE Journal. We confirm that this research is original and has not been published elsewhere, nor is it currently under publication elsewhere. In this study, we analyse community perceptions, acceptability and barriers to the implementation of the reactive focal mass drug administration as a strategy for malaria elimination. This research is relevant because it represents a continuous documentation of local initiatives for malaria elimination in Mozambique, following the implementation and documentation of previous strategies in the same setting. The findings of this study showed that the reactive focal mass drug administration is accepted as a strategy for malaria elimination. However, reluctance to take pregnancy test among women with reproductive age, concern on drug adverse reactions, and reluctance to take antimalarial drugs without any symptom were reported as potential barriers that could hinder reactive focal mass drug administration as a strategy for malaria elimination.

All authors have agreed to the submission of this version.

We appreciate your time and look forward to your response.

Yours sincerely



Carlos Eduardo Cuinhane

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1 **Full title:**

2 **Acceptability and perceived barriers to reactive focal mass drug**
3 **administration in the context of a malaria elimination program in**
4 **Magude district, Southern Mozambique: A qualitative study**

5

6 **Short title:**

7 **Acceptability and barriers to reactive focal drug administration in**
8 **Mozambique**

9

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22 **Abstract**

23 This study analysed acceptability and perceived barriers to reactive focal mass drug
24 administration (rfMDA) among community members exposed to community engagement
25 campaigns and malaria elimination interventions in Magude district, following mass drug
26 administration (MDA) in the same district. The study used a formative qualitative study design
27 consisting of 56 semi-structured interviews with community members, including community
28 leaders, household heads, women of reproductive age, members of the community and
29 adolescents, 4 semi-structured interviews with community health workers, 9 semi-structured
30 healthcare professionals; and 16 focus group discussions with adult general population. A
31 content thematic analysis approach was used to analyse the data. The results of this study
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33 previous similar programme, such as MDA, and due to favourable perceptions built on the
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35 Perceived barriers to rfMDA include lack of access to accurate information, reluctance to take
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38 intervention. But more community engagement is need to foster community involvement and
39 self-appropriation of the malaria programme elimination.

40

41 **Keywords:** Acceptability, Barriers, Magude, Malaria, Reactive focal mass drug
42 administration.

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47 **Introduction**

48 Mozambique is one of the sub-Saharan countries that has made significant progress toward
49 malaria elimination [1,2]. However, the country is still considered one of the 6 countries with
50 the highest malaria burden in the world, contributing with an estimate of 4% of malaria cases
51 in 2018 [2]. Several strategies have been implemented in the country to accelerate malaria
52 elimination in southern Mozambique [3]. These strategies include increasing the coverage of
53 long-lasting insecticidal nets (LLINs), yearly rounds of universal indoors residual spraying
54 (IRS), improvement of case management and surveillance system throughout the country
55 [3,4,5]. These strategies are parts of the recommended tools of the World Health Organization
56 (WHO) Global Technical Strategy (GTS) for Malaria 2016-2030 [6].

57

58 Magude district, in particular, has been benefiting from a project led by the Manhiça Health
59 Research Centre (CISM) since 2015, which aims to eliminate malaria. The project consisted in
60 implementation of a comprehensive mixed interventions that included LLINs, IRS and four
61 rounds of mass drug administration (MDA) to all the eligible members of the population of
62 Magude between 2015 and 2017 using the half-life drug dihydroartemisinin-piperazine
63 (DHAp) [5,7]. These interventions were implemented following different assessment and
64 baseline studies on malaria elimination in the district [8-10] that informed the perceptions of
65 the community before and during the implementation of the project.

66

67 Some factors influenced the implementation of malaria elimination interventions in Magude
68 district, including refusal of IRS and LLINs use [9], absenteeism of the household head which
69 compromised the decision-making in participation of MDA campaign, and fear of DHAp and
70 its adverse event [7]. Notwithstanding these constraints, the implementation of the

71 comprehensive mixed intervention has resulted in reduction of malaria case in Magude district
72 [5].

73

74 Despite a promising of the implemented mixed intervention in malaria case reduction, the
75 elimination of malaria in the district has not yet been achieved. In a such case, the WHO
76 recommends reactive epidemiological surveillance, which is an intervention suitable to the late
77 stages of the fight towards malaria elimination [11]. In this context, a reactive focal mass drug
78 administration (rfMDA) was implemented in Magude district, southern Mozambique, from
79 July 2017 to January 2020 to maintain the gains and prevent an upsurge of malaria transmission
80 after MDA.

81

82 rfMDA consisted of following up all passively malaria detected cases at health facilities and
83 community health workers to their households and administering the antimalarial drug DHAp
84 to all their family members and neighbours. When a household was visited, the fieldworkers
85 explained the reasons of the visit; enrolled the household members to the study through
86 informed consent forms; administrated electronic questionnaires of all household members
87 gathering sociodemographic and malaria risk and prevention information; evaluated each
88 household member's eligibility to be administered DHAp, which included pregnancy testing
89 to consenting women of reproductive age and malaria rapid diagnostic test to all eligible
90 members of the households; and administrated DHAp according to each member's age. The
91 administration of DHAp followed the same procedures used in MDA in the same district
92 [8,5,7]. The implementation of rfMDA strategy was complemented by a community
93 engagement campaign incentivising the population to seek healthcare upon the presentation of
94 fever and to adhere to the reactive surveillance intervention.

95

96 This study analysed acceptability and perceived barriers to reactive focal mass drug
97 administration (rfMDA) among community members exposed to community engagement
98 campaigns and malaria elimination interventions, such as healthcare providers, community
99 health workers, community leaders, women of reproductive age, adolescents and general
100 members of the community in Magude district.

101

102 **Methods**

103 **Study setting**

104 The study was carried out in a rural Magude district located in the northwest of Maputo
105 province, southern Mozambique. In 2017, the district has 63,691 inhabitants and 14,583
106 households [12] distributed in 5 Administrative Posts: Magude village, Motaze, Mahele,
107 Panjane and Mapulanguene [13], and the study covered all these 5 Administrative Posts. There
108 are 9 rural health facilities, 1 referral health centre and 27 community health workers (CHWs)
109 throughout the district [14]. CHWs provide diagnosis and treatment of malaria and other
110 diseases, such as diarrhoea, pneumonia and refer patients with signs of sickness requiring high
111 medical attention [15]. Both health providers and community health workers engage in
112 community sensitization about malaria using a social behaviour change communication
113 approach of the Plan of the National Malaria Control Program (NMCP) [16]. The level of
114 malaria in the district is considered moderate, with about 200 cases per 1000 prior to MDA
115 [14]. The district has been exposed to malaria prevention strategies, such as malaria case
116 management using artemether-lumefantrine, vector control, IRS and the population has been
117 exposed to several malaria research activities before and after Magude project [5,8].

118

119

120 **Study design**

121 A formative qualitative study assessed acceptability and perceived barriers to reactive
122 surveillance strategy among community members exposed to community engagement
123 campaign and malaria elimination interventions. The study was undertaken in September 2017
124 before the start of the reactive surveillance intervention and continued during the first two
125 months after the start of the intervention.

126

127 **Sample strategy and sample size**

128 A purposive sampling was performed to select individual members representing different
129 groups in the community. These groups included adult household heads (≥ 18 years old), adult
130 women of reproductive age (18-49 years old), female adolescents (12-17 years old), adult
131 members of the community (≥ 18 years old) and community leaders (≥ 18 years old). The same
132 strategy was used to select adult general population (≥ 18 years old) who composed focus group
133 discussions (FGD). These participants were selected to capture the view and the lay
134 perspective, as well as mapping the barriers with regard to reactive focal mass drug
135 administration. A total of 69 participants of different community groups, comprising individual
136 semi-structured interviews, and 157 participants of the general population, who participated in
137 FGDs, were included in the study (Table 1).

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143 Table 1. Study sample size

Study setting	Individual semi-structured interviews								FGDs (n=16) with general population		
	Household head	Women of Reproductive age	Adolescent	Member of the community	Community leader	Health professionals	CHWs	Total	Men	Women	Total
Magude village	1	1	5	6	6	5	1	25	8	37	45
Motaze	4	3	2	4	0	0	0	13	1	16	17
Mahele	1	3	0	0	1	2	0	7	13	20	33
Panjane	2	1	2	5	2	1	2	15	7	11	18
Mapulanguene	1	2	0	3	1	1	1	9	16	28	44
Total	9	10	9	18	10	9	4	69	45	112	157

144

145 The study also included healthcare providers who were engaged in malaria campaign and
146 malaria elimination interventions. A purposive sampling was used to select 9 healthcare
147 professionals and 4 CHWs in all the study settings (Table 1). Health professionals were
148 working in the health facilities located in the same communities where the study took place.
149 The community health workers also worked in the same communities in coordination with
150 the local health facilities.

151

152 **Data collection**

153 Semi-structured interviews (SSI) and focus group discussions (FGDs) were used to collect
154 data. Individual SSI were administered to household heads, women of reproductive age,
155 adolescents, members of the community, community leaders, healthcare professionals and
156 community health workers; while FGDs were used to collect data with adult general
157 population. The size of each FGD varied between 8 and 12 members, and each FGD lasted
158 between 60 and 80 minutes. Data collection guides for both SSI and FGDs were designed to
159 capture perceptions of rfMDA, acceptability of the procedures of rfMDA and the reasons for
160 its acceptability, and barriers that could emerge during the implementation of rfMDA. Guides
161 were prepared in Portuguese, and a pilot test was performed in the local language Changana
162 before the beginning of data collection. Based on the pilot test, the guides were refined. SSI
163 were conducted in both Portuguese and Changana, depending on the language preference of
164 the participants, while all FGDs were conducted in Changana. The interviewers, who are fluent
165 in Portuguese and Changana, were trained to conduct SSI and facilitate FGDs. All interviews
166 and FGDs were digitally recorded, and later independently transcribed in Portuguese. The
167 research team controlled the quality and accuracy of the transcriptions.

168

169 **Data analysis tools**

170 A content thematic analysis approach was used to analyse the data of SSI and FGD. First, data
171 management was conducted using Nvivo 12 (QRS International Pty. Ltd.), a qualitative
172 package for qualitative data analysis, following designed generic outline nodes representing
173 the coding structure. Themes and subthemes emerging from the data were critically discussed
174 until a consensus of the researchers was reached. The final themes were: awareness and
175 acceptability of reactive focal mass drug administration, acceptability of the procedures used
176 in reactive focal mass drug administration strategy and barriers to reactive focal mass drug
177 administration strategy.

178

179 **Ethical considerations**

180 The study was approved by CISM's institutional ethics committee (CIBS-CISM) and the
181 Mozambican Ministry of Health National Bioethics Committee, and it was registered as
182 protocol number Ref:146/2017. All participants received detailed information about the study
183 objectives. A written informed consent was obtained from all participants prior their
184 participation in the study. The study obtained a written informed consent from all parents or
185 guardians of the young adolescents (12-17 years old) included in the study. Moreover, an assent
186 was sought from all young adolescents that participated in this study. Participants were assured
187 about their anonymity and confidentiality throughout the research process. Thus, all
188 participants names were not recorded, and all informed consents, digital records and databases
189 were securely stored at a secure server of CISM.

190

191

192

193 **Results**

194 The participants of this study included different community groups, general population of the
 195 community, healthcare professionals and community health workers. Table 2 and Table 3
 196 summarise the characteristics of participants per community group and general population who
 197 participated in focus group discussion respectively. The majority of participants were married
 198 or living with a partner, had primary school and worked as famers.

199

200 Table 2. Sociodemographic characteristics of participants per community group

Variables	Community leaders (n=10)	Household head (n=9)	Women of reproductive age (n=10)	Adolescents (n=9)	Members of the community (n=18)
Sex					
Male	100%(10/10)	77,8% (7/9)	0 (0/10)	0 (0/9)	16,7% (3/18)
Female	0 (0/10)	22,2% (2/9)	100%(10/10)	100% (9/9)	83,3% (15/18)
Educational level					
None	10% (1/10)	33,3% (3/9)	10% (1/10)	0 (0/9)	11,1% (2/18)
Primary school	90% (9/10)	66,7% (6/9)	60% (6/10)	77,8% (7/9)	88,9% (16/18)
Secondary Education	0 (0/10)	0 (0/9)	30% (3/10)	22,2% (2/9)	0 (0/18)
Marital Status					
Single	0 (0/10)	0 (0/9)	30% (3/10)	77,8% (7/9)	5,6% (1/18)
Married or living with a partner	90% (9/10)	100% (9/9)	70% (7/10)	22,2% (2/9)	94,4% (17/18)
Widowhood	10% (1/10)	0 (0/9)	0 (0/10)	0 (0/9)	0 (0/18)
Occupation					
Farmer	100%(10/10)	77,8% (7/9)	80% (8/10)	22,2% (2/9)	77,8% (14/18)
Salesperson	0 (0/10)	11,1 % (1/9)	0 (0/10)	0 (0/9)	5,6% (1/18)
Security	0 (0/10)	11,1% (1/9)	0 (0/10)	0 (0/9)	0 (0/18)
Housewife	0 (0/10)	0 (0/9)	10% (1/10)	11,1% (1/9)	11,1% (2/18)

Traditional healer	0 (0/10)	0 (0/9)	0 (0/10)	0 (0/9)	5,6% (1/18)
Student	0 (0/10)	0 (0/9)	10% (1/10)	66,7% (6/9)	0 (0/18)
Religion					
Atheism	10% (1/10)	22,2% (2/9)	10% (1/10)	0 (0/9)	0 (0/18)
Christianity	90% (9/10)	77,8% (7/9)	90% (9/10)	100% (9/9)	88,9% (16/18)
Animism	0 (0/10)	0 (0/9)	0 (0/10)	0 (0/9)	11,1% (2/18)

201

202 Table 3. Sociodemographic characteristics of focus group discussion participants

Variables	Frequency	%
Sex		
Male	45	28,7
Female	112	71,3
Education level		
None	51	32,5
Primary	87	55,4
Secondary	19	12,1
Marital Status		
Single	21	13,4
Married or living with a partner	118	75,2
Widow/Widower	18	11,5
Occupation		
Farmer	123	78,3
Labourer	14	8,9
Salesperson	7	4,5
Housewife	5	3,2
Students	3	1,9
Traditional healer	5	3,2

Religion		
Atheism	24	15,3
Christian	125	79,6
Animist	8	5,1

203

204 Table 4 presents the characteristics of healthcare professionals and community health workers. The
 205 majority of participants had secondary school. Almost all healthcare professionals had specialised
 206 training in primary healthcare and working as maternal and child health nursing, general nursing,
 207 technician of preventive medicine and assistant of service, while community health workers had not
 208 any specialised training.

209


210 Table 4. Sociodemographic characteristics of healthcare professionals and community health
 211 workers

Variables	Healthcare professionals (n=9)	Community health workers (n=4)
Sex		
Male	44,4% (4/9)	50% (2/4)
Female	55,6% (5/9)	50% (2/2)
Education level		
Primary	0 (0/9)	75% (3/4)
Secondary	88,9% (8/9)	25% (1/4)
High Education	11,1% (1/9)	0 (0/4)
Marital Status		
Single	66,7% (6/9)	0 (0/4)
Married/living with a partner	33,3% (3/9)	75% (3/4)
Widow	0 (0/9)	25% (1/4)
Religion		

Atheism	11,1% (1/9)	25% (1/4)
Christian	88,9% (8/9)	75% (3/4)

212

213

214 **Awareness and acceptability of reactive focal mass drug**
 **administration**

216 **Awareness of reactive focal mass drug administration**

217 Most participants of this study were aware about rfMDA programme that was taking place in
 218 the community, and they had participated in previous MDA campaign. Participants received
 219 information about rfMDA from community leaders, community meetings, radio, neighbours
 220 and healthcare professionals after visiting a health facility and testing malaria. Few participants
 221 said that they only knew about rfMDA when their parents were tested malaria at the health
 222 facility or when a fieldworker visited the household to test malaria to all members of the family.

223

224 *“Researcher: Where did you hear or how did you get information about the malaria tablets*
 225 *programme?”*

226 *Participant 2- We only saw people arriving in my house saying that they are coming to give*
 227 *-pills. The name of the person who was sick with malaria was found [at the health centre], then*
 228 *they came to ask 'where is the house of person X', then people indicated, 'it is there'.*

229 *Researcher: Didn't you get information from the secretaries of the districts?*

230 *Multiple participants: [Voices overlapping]: No.*

231 *Researcher: Were you surprised?*

232 *Participant 2: Yes. They were asking, “where is the house of person X?”*

233 *Participant 1: In my house they just arrived and came in by surprise.*

234 *Participant 4: Me too, I was not told by the secretary, I just saw people entering in my house,*
235 *asking "person X's house where is it?". I said it's here" (FGD 15, general population, Motaze).*

236

237 All participants of different groups of the community said that the objective of rfMDA was to
238 treat, cure and eliminate malaria. They viewed rfMDA as important to their families and
239 communities because it helped to diagnose, treat and prevent malaria, which they perceived as
240 a problem in the community. Participants also perceived that since the beginning of MDA and
241 rfMDA programmes, their health status had improved, malaria cases had decreased, and they
242 believed that these programmes cured malaria. Some participants said:

243

244 *"It is very important. I have a child who never stayed two months without going to hospital*
245 *because of malaria, but since they started distributing pills, he no longer suffers from malaria,*
246 *even if he has a fever, I run to the hospital, they give him pills and the fever disappears" (FGD*
247 *15, general population, Motaze).*

248

249 *"I think it is good because before this project [rfMDA] started, when my son and I got sick, I*
250 *knew beforehand that the other one would also get sick quickly, so I had to get money urgently*
251 *and go back to the hospital, but since the distribution of the pills, my children and I have not*
252 *got sick until today" (FGD 04, general population, Mahele).*

253

254 Most participants had an experience about rfMDA program, and they said that home treatment
255 included all members of the family. Only some participants had not experience of rfMDA.
256 Those who had experience viewed rfMDA as important because the diagnosis, treatment and
257 prevention included all members of the family. Some participants expressed their opinion as
258 follows:

259 *“It happened to me, I went to hospital when I was very sick with malaria, I arrived and they*
260 *did a malaria test and it showed malaria. They sent the fieldworkers the next day at 8 o'clock*
261 *and when they arrived here at home, they treated me, they treated all people here at home, so*
262 *that they would be prepared, so that the malaria that I had wouldn't contaminate them. I felt*
263 *very good because they helped me with this disease that I had. They came to my house to treat*
264 *me, from then on, I took the pills that I was given until then I feel very well, I still haven't fallen*
265 *ill with malaria”* (SSI 07, member of the community, Mapulanguene).

266

267 *“Even myself I got sick with malaria, they came in my house to test, no one else was diagnosed*
268 *with malaria, but everyone was given pills even without having malaria. They didn't give me*
269 *more pills because I was taking pills”* (FGD 15, general population, Motaze).

270

271 **Acceptability of malaria reactive focal mass administration**

272 All participants of different groups of the community with or without experience, regardless
273 their place of residence, accepted and welcomed the rfMDA programme because it prevented
274 malaria and helped to improve their health status. Moreover, participants perceived that the
275 programme saved people to die from malaria and it eliminated malaria in the community.

276

277 *“The community accepts [rfMDA] because they are seeing that they have no other way to*
278 *prevent the outbreak of malaria or eliminate malaria because malaria kills. It is imperative*
279 *that they accept and comply with the recommendations so that we can eliminate malaria”* (FGD
280 01, general population, Panjane).

281

282 *“I accept because I see that the fieldworkers follow us from hospital to our homes because of*
283 *this malaria disease. When they do follow up it allows everyone to be diagnosed, including*

284 *those who do not like to go to hospital, and so one can fight and eliminate this disease*
285 *[malaria]” (FGD 09, general population, Motaze).*

286

287 Furthermore, all participants accepted rfMDA because it is based on home treatment, which
288 reduced the cost of transport to the health facility, and helped people who are lazy to go to the
289 health facility when they have malaria symptoms and those who live far from the health facility.

290

291 *“Researcher: Thank you very much. Do you think it is important that we distribute pills in the*
292 *districts?*

293 *Participant: It is very important, it helps us with diseases, even the persons who are lazy to go*
294 *to the hospital when they have malaria symptoms, they end up taking it, because the pills go to*
295 *their house” (SSI 03, community leader, Magude village).*

296

297 *“Maybe I could be sick and I would have to go to hospital, but I might not have money. I could*
298 *borrow money to go to hospital but this programme [rfMDA] helps because the fieldworkers*
299 *come to my house; this is very good because I no longer have to spend money to go to hospital.*
300 *The fieldworkers do complete and better work” (FGD 04, general population, Mahele).*

301

302 *“Here in Mapulanguene, this activity of following up people to their homes when a person is*
303 *sick is very important because there are people who cannot walk and cannot go to the hospital*
304 *because there is no transport. If these people get sick, the solution is to transport them in a*
305 *hand truck to the hospital. But now the fieldworkers are able to go directly to the homes of*
306 *these people to diagnose and treat them. In my opinion, I see that the population is satisfied*
307 *with this type of treatment” (SSI 10, community leader, Mapulanguene).*

308 Some participants said that they accepted rfMDA because they were following norms from the
309 health facility. They also perceived that if they do not accept malaria treatment, they might
310 experience difficulties in the future malaria treatment at the health facility. One of the
311 participants presented his view as follows;

312

313 *“Haaa... we accept because those are the norms and you must comply with. If you don't accept*
314 *to be cured, when you go to hospital (...) while you have malaria, they [healthcare*
315 *professionals] will say that you are not sick with malaria because you didn't accept this*
316 *treatment [rfMDA]. They will say that you are happy when people die in the community, and*
317 *that when you get malaria you will contaminate everyone. So, we accept that when one person*
318 *from the household gets sick, the fieldworkers come to test the rest of the household members*
319 *so that everyone is protected”* (FGD 01, general population, Panjane).

320

321 Almost all participants of different members of the community assumed that everybody would
322 accept to participate in the rfMDA programme because most people were aware of the severity
323 of malaria including its death consequences, and also because they had experience of the
324 benefits of the previous similar campaign against malaria (MDA).

325

326 *“Everybody will adhere to the programme because uhm, malaria kills. And at that time before*
327 *these pills existed others died because of this disease (...). Because what happens is that when*
328 *people get malaria today, tomorrow they wake up well, it attacks them the day after tomorrow,*
329 *the next day they wake up well, when malaria is rising and then it gets to the point that they*
330 *don't even wake up and then go to hospital when it has risen, the person is already losing his*
331 *life by then. But soon after those pills arrived, we escaped, I still haven't heard that anyone has*
332 *died of malaria now, since we have been taking those pills. Now even if they go around the*

333 *houses giving us pills there is no one who will deny; people will accept”* (FGD 09, general
334 population, Motaze).

335

336 The experience with previous similar campaigns and the awareness of similar programs were
337 emphasized by one community leader who mentioned that people would participate in the
338 rfMDA because they are familiar to this kind of campaigns and its benefits in preventing
339 malaria as well as avoiding the travelling to the health facility due to malaria.

340

341 *“People have been already informed about program alike this in the past. Since this help of*
342 *distributing malaria pills started [MDA], people are often informed about it. I don't think they*
343 *can refuse to participate because since we started to take these pills people no longer frequently*
344 *go to the hospital due to malaria”* (SSI 08, community leader, Magude village).

345

346 Some participants also said that most people were aware that they had common consensus
347 regarding malaria. This consensus consisted on the idea that malaria was a problem of all
348 members of the community, and therefore, they had to fight against it; and they viewed rfMDA
349 programme as a vehicle which helps to eliminate it.

350

351 *“People will accept the program because we all have the same problem, which is malaria, and*
352 *we have been struggling to fight against this disease”* (SSI 05, household head, Motaze).

353

354 **Acceptability of the procedures used in reactive focal mass drug** 355 **administration**

356 The procedures of rfMDA consisted of following up all patients tested malaria at the health
357 facility or by community health workers. Fieldworkers followed the patients to their homes,

358 performed malaria and pregnancy test, and treated household members and the surrounding
359 neighbours. This theme analyses community acceptability of these procedures.

360

361 **From health facility to home treatment**

362 All participants accepted and welcomed the procedure of following up patients from the health
363 facility to their homes. Participants perceived that this procedure would prevent high transport
364 cost from home to the health facility, it would enable them to know the number of people
365 infected by malaria at the household, and it could contribute to eliminate malaria and prevent
366 death from it.

367

368 *“We received fieldworker from the health facility because we want to know if there is someone
369 else here at home with malaria, or is it just that person who we took to the hospital and tested
370 malaria”* (FGD 10, general population, Magude village).

371

372 *“We used to die a lot from malaria, because when the person was shaking and could not go to
373 hospital, and ended up dying inside the house (...) because many people do not have
374 possibilities to take the sick to hospital. Now, treating the disease [malaria] at home, this will
375 decrease malaria and avoid deaths from malaria”* (FGD 09, general population, Motaze).

376

377 Moreover, some participants perceived that a visit from the health facility showed an interest
378 of the healthcare professionals about patients that tested positive to malaria. The following
379 excerpt presents participants' views who had experience of rfMDA.

380

381 *“Participant 2: [Fieldworkers] came to my house because I went to the hospital and tested for
382 malaria. They came to my house to visit me. They said they were going to visit other people*

383 *who had also been diagnosed with malaria in hospital. So, they visited me up to two to three*
384 *times. I thank them for the visit since they are visiting me, they want to know if I am better or*
385 *not.*

386 *Participant 5: They are good visits, because they are visiting us after we go to the hospital to*
387 *know how we are doing, it is good like this when healthcare professionals visit us” (FGD 05,*
388 *general population, Magude village).*

389

390 Healthcare professionals, in particular, hypothesized that communities would accept receiving
391 fieldworkers from the health facility because the procedure will prevent many patients to go to
392 the health facility, where they often spend long time to be treated.

393

394 *“[The procedure] is positive, because in addition to reducing mortality, it also reduces the*
395 *number of patients in the hospital; because the person goes and arrives and stays a long time,*
396 *he/she has to go to the consultation, from the consultation they are sent to the laboratory, from*
397 *the laboratory they have to go back again for the consultation, and it's not one and the same*
398 *person. So, I think it is one of the reasons why the community accept this procedure” (SSI 09,*
399 *healthcare professional, Magude village health facility).*

400

401 In addition, some healthcare professionals viewed the procedure as an opportunity to visit
402 communities; and a such visiting could represent the commitment of the healthcare
403 professionals with the communities and strengthen the relationship between the healthcare
404 professionals and communities.

405 *“It is a welcome activity because, firstly, when they receive a visit from healthcare*
406 *professionals, the community feel valued because they know the healthcare professionals go*
407 *out from the health units to the community to find out about the health situation of that*

408 *community. For the communities, the visit shows some interest of healthcare professionals to*
409 *the community. First, we gain that trust with our community as an institution and second, I can*
410 *say that we manage to detect the possible cases [of malaria] that may be emerging and at some*
411 *points hidden in the community” (SSI 04, healthcare professional, Mahele health facility).*

412

413 *“(…) the strategy is welcome, it is very welcome, because it will help to eliminate malaria in*
414 *the community. The strategy also benefits the Ministry of Health because with the elimination*
415 *of malaria, the ministry will focus on other diseases” (SSI 05, healthcare professional, Panjane*
416 *health facility).*

417

418 Other healthcare professionals said that following patients from the health facility to their
419 homes would also enable to identify other members who could have malaria symptoms and
420 monitor those who have already tested positive to malaria.

421

422 *“Following participants who test positive for malaria is a good activity, because when we go*
423 *to the house, after we have tested a member, we can see if that member tested positive for*
424 *malaria is or is not complying with the medication. But, also at home there might be another*
425 *member with malaria, so when we go there [in the household], we test, we will know how many*
426 *people have malaria” (SSI 05, healthcare professional, Mapulanguene health facility).*

427

428 **Acceptability of malaria test at home**

429 Most participants accepted to be tested malaria at home because they perceived that testing was
430 a way of diagnosing malaria, which most of the time can be hidden in the body. In addition,
431 participants said that the home testing enabled to diagnose other diseases that people might not
432 know.

433 *“I accept to do the test because when someone appears who was bitten by mosquitoes, they go*
434 *to the hospital, then they are able to follow up on that case, they go to the house of the person*
435 *who was detected with malaria, test the people from home, medicate so that they don't get sick.*
436 *They do that because that person who was detected malaria and it can be the case that the*
437 *mosquito contaminates the other people, but there can also be people with malaria in that*
438 *household who have not yet gone to the hospital”* (SSI 05, household head, Motaze).

439

440 *“I am happy with the test because they discover many other diseases. Before they started this*
441 *work, it was difficult to manage diseases, we did not know where to turn, what to do with them,*
442 *but nowadays we know. We are healthy. If I happen to discover an illness that has nothing to*
443 *do with these pills, they advise me to go to the hospital to get the right medication. I leave and*
444 *go to the hospital and there they give me pills that correspond to the disease I have. I see it as*
445 *something good”* (FGD 04, general population, Mahele).

446

447 Some participants also perceived that testing was the only guarantee to know their health status
448 and to comply with the prescribed medication. They said that they wished to be tested to know
449 if they had malaria or not, and only thereafter they would be sure about the disease they are
450 suffering from and take the prescribed pills.

451

452 *“If the fieldworkers come to my house and they don't test me, I don't feel happy. I want them to*
453 *test me until they tell us that we don't have malaria, only then will we feel happy, because even*
454 *if you go to the hospital and then arrive with the child when he is sick, if they don't test him*
455 *and then take any pills and give to him without testing him, he won't feel at comfortable. If the*
456 *child takes the pills and the next day he doesn't get better, he will say that it is because they*

457 *didn't do any analysis, maybe it's malaria, you don't feel happy*" (FGD 09, general population,
458 Motaze).

459

460 **Acceptability of including neighbours in malaria treatment**

461 Participants were asked if they would accept malaria treatment after their neighbours were
462 tested positive to malaria. All participants said that they would accepted malaria treatment if
463 their neighbours tested positive to malaria, even if none of their household members was tested
464 positive to malaria. This acceptability derived from the fact that participants perceived that
465 malaria was transmissible, and for that reason, including neighbours in malaria treatment would
466 prevent others from getting the disease.

467

468 *"Participant 3: I accept because I will not only prevent the people in my house, but also the*
469 *neighbours (...). This activity of fighting malaria, eliminating malaria from neighbour to*
470 *neighbour is good because we will all be free from malaria.*

471 *Participant 1: In my opinion, I see that it is very good when the fieldworkers come to test me*
472 *for malaria and also test the people at home and the neighbours, because it may happen that*
473 *the mosquito that bit me comes back to bite the people here at home and the neighbours. The*
474 *mosquito can enter in the house of the immediate neighbours.*

475 *Participant 5: Once I have been infected with malaria it may happen that the neighbours are*
476 *also infected because the mosquito bites here, comes out and bites the neighbours. I see these*
477 *activities are very important to prevent malaria"* (FGD 13, general population,
478 Mapulanguene).

479

480 **Acceptability of pregnancy test at home**

481 All participants of different groups said that they would accept pregnancy test at home. Most
482 participants were aware that a pregnant woman should not take malaria pills. In addition,
483 participants said that most women of reproductive age might not know if they are pregnant or
484 not, and the test would help to disclose the status of the women before administration of the
485 pills.

486

487 *“Participant 3: We accept the pregnancy test because the fieldworker will be following the*
488 *norm "that you cannot give pills if I am pregnant, it may happen that I say I am not pregnant,*
489 *while I am, I want to undo the pregnancy to relieve myself". So, I don't see a problem in this*
490 *issue of taking pregnancy test to know if you are pregnant or not. Also, even if the person has*
491 *not spoken, it is necessary that they first be tested to know if they are pregnant or not, because*
492 *it can happen that they say they are not, while they are, they give pills and the pregnancy*
493 *undoes itself.*

494 *Participant 5: In a household there can be girls, one of them can be pregnant and no one in*
495 *the house knows, she got pregnant and so on, it's not official [refers to a pregnancy contracted*
496 *from a man not known to the family members and who has not gone through some ceremony*
497 *of making the relationship official] so, no, the culprit will not be the fieldworker, because they*
498 *also did not know of the existence of the pregnancy.*

499 *Participant 7: It is also not correct that a girl is pregnant and takes the pills. If the girl is*
500 *pregnant and after taking the pills the pregnancy falls apart, it would be the fault of the*
501 *fieldworker” (FGD 15, general population, Motaze).*

502

503 Both women of reproductive age and adolescents accepted to be tested, and they also knew the
504 importance of pregnancy test before the administration of the malaria pills. They said that if a

505 pregnant woman took the malaria pills she could suffer abortion. They perceived the pregnancy
506 test as a way of preventing abortion.

507

508 *“We do pregnancy tests for women because it can happen that they give pills while she is not*
509 *well, if they give pills while she is pregnant, she can have complications or lose that pregnancy*
510 *here at home, the fieldworker who gave the pills will be guilty” (...)* (SSI 05, woman of
511 reproductive age, Motaze).

512

513 *“They do the pregnancy test because of the malaria tablets. If they find me while I am pregnant,*
514 *after being tested, if I take those pills, they can cause an abortion. The test is for the*
515 *fieldworkers to be sure that the person is not pregnant because there are people who don't even*
516 *know if they are pregnant or not”* (SSI 08, adolescent, Magude village).

517

518 In addition, some women of reproductive age and members of the community said that they
519 were *“pleased”* to performance pregnancy test because it enabled them to discovery the
520 pregnancy.

521

522 *“The test is very good because you can be pregnant without knowing. The first time I was tested*
523 *I was breastfeeding my baby and I didn't know that I was already pregnant. When they did the*
524 *test, they found out that I was pregnant, but I didn't even know, they did me a big favour because*
525 *even my husband didn't know; the pregnancy was hidden, the child was sucking dirt (...). If it*
526 *hadn't been for the test, I would only realise that I was not well when the belly was already big,*
527 *so the test was very important”* (SS 02, woman, member of the community, Magude village).

528

529 Moreover, household heads, both women and men, and community leaders mentioned that they
530 accepted pregnancy test to their wives and female adolescent as they acknowledged that they
531 might not know if they were pregnant or not. In addition, they viewed a pregnancy test as
532 “good” because it helped to diagnose several diseases, and it enabled pregnant women to seek
533 health facility early for treatment and follow-up of the pregnancy.

534

535 *“The pregnancy test is important because if the person is tested they [fieldworkers] can find many other*
536 *diseases; if they find diseases, the doctors will treat those diseases that she has. The person is tested*
537 *because it may happen that she is pregnant while she has malaria, the child may get it from inside the*
538 *mother [in pregnancy]. When the woman is tested, various diseases will manifest then, so that both*
539 *mother and child will be treated”* (SSI 10, household head, Motaze).

540

541 *“Participant 1: When they test us and find out that we are not pregnant we are happy because*
542 *we are breastfeeding.*

543 *Participant 3: Testing girls for pregnancy does not pose any problems because they grow up.*
544 *For us mothers, if it is me, finding my daughter in this state [pregnant], for me it is a help*
545 *because I live with her without knowing. It happened to me, I want to be honest, I sent my*
546 *daughter to school without knowing that she was pregnant. The school sent her back home*
547 *because she was pregnant, but if I had known before, I wouldn't have sent her to school.*

548 *Participant 5: I don't see any problem in testing my daughters because if you find out that my*
549 *daughter is pregnant, and tell me I will have information or tell her in secret, she will come to*
550 *know that she is pregnant (...). There is no problem, even if she is not in the home (...)*” (FGD
551 07, general population, Mapulanguene).

552

553 *“Normally, when a woman is pregnant she has to go to the hospital to be tested, but there are*
554 *others who know the importance of being tested and there may be something that is not right,*

555 *if you come to test the person you may discover something that the person did not know. The*
556 *fieldworkers test women in the clusters to know if they are pregnant or not. But if they are, they*
557 *rescue the woman quickly or advise her to go to hospital for further care very early” (SSI 11,*
558 *member of the community, man, Panjane).*

559

560 **Acceptability to take malaria pills at home**

561 Most participants accepted to take malaria pills at home even when they were not sick of
562 malaria as they perceived that pills prevented malaria to the members of the family and
563 community members, which in turn prevents people to often go to the health facility because
564 some of them lived far from the health facility. In addition, a community leader stated that
565 since the start of the mass drug administration, he has witnessed a reduction in malaria cases.
566 The same participant also said that the community had learned from previous experience, such
567 as MDA, that malaria pills protect people from diseases.

568

569 *“I accept taking tablets even without malaria. Even if field workers leave my neighbour's house*
570 *after giving pills, come here at home, we all have a duty to accept, because since we started*
571 *taking pills in 2016 until now we have seen a reduction in malaria. So, we should not refuse,*
572 *we have to accept taking tablets to prevent malaria” (SSI 09, community leader, Magude*
573 *village).*

574

575 Regarding the easiest group to accept malaria pills, some participants mentioned young and
576 adult women, adult men, elders, community leaders and all people with the disease experience
577 of malaria and were not willing their family members to get it.

578

579 *“Neither our ladies' group nor the gentlemen's group can refuse, because when you start to get*
580 *sick, no one is happy about it, we rejoice when our children and we adults are in good health.*
581 *Therefore, we cannot refuse [to take pills]”* (FGD 04, general population, Mahele).

582

583 *“I think the group of mothers are the ones who understand the most, because they have younger*
584 *children. They quickly understand why they prevent themselves and their child's health. They*
585 *usually follow the healthcare programmes. The elderly also easily accepts to take the pills. In*
586 *general, adults will accept because they comply with one thing and another that is said. When*
587 *you speak, they feel firm in your words and you make sure that you also do it in your house,*
588 *they like it”* (SSI 04, community health worker, Mapulanguene village).

589

590 *“The people who most accept to take pills are those who have information about why malaria*
591 *exists and those who already feel it in their skin because they have had malaria in the past (...)*
592 *They are the people who already know they have malaria and do not want their family to have*
593 *it too (...)”* (SSI 05, healthcare professional, Panjane health facility).

594

595 **Barriers to reactive focal mass drug administration**

596 Questioned on the main barriers to the reactive focal mass drug administration, the included
597 different groups of the community said that there were some barriers regarding the ongoing
598 implementation of rfMDA. They predicted that not everybody would accept to be tested and
599 some community members might insult or mistreat the fieldworkers because each member has
600 its own way of thinking.

601

602 *“It depends, not all of us here can accept the same thing [home testing]. It depends on each*
603 *one's interpretation, I can accept and my mother can't, but we are living in the same house, it's*

604 *my mother, I'm the daughter, but I can deny and she can accept, each person has her own way*
605 *of thinking*" (SSI 08, adolescent, Magude village).

606

607 *"It is possible that the person you are going to meet in some household will insult you; he may*
608 *say: go back with that job of yours (...). Other people may make jokes and talk a lot of nonsense*
609 *(...)"* (SSI 05, community leader, Magude village).

610

611 Some participants also said that some household heads might not allow fieldworkers to enter
612 in the house and treat the members of the family, or fieldworkers might be poorly treated, while
613 others pointed out issues related to the absence of some or all members of the household. For
614 the participants, these barriers could hinder the rfMDA programme.

615

616 *"Fieldworkers can be turned away, not allowed to enter in the houses. As community leaders,*
617 *we have been called by neighbours, informing that the fieldworkers wanted to enter in a*
618 *household, but they were being threatened (...)"* (SSI 03, community leader, Mahele).

619

620 *"The only barriers they [fieldworkers] can find are like arriving at a house and not finding*
621 *anyone. After sometimes, this family may get sick while people [fieldworkers] have already*
622 *passed (...). In relation to other things, I don't see barriers if people are found and accept,*
623 *although we are not equal in understanding, because you can arrive in a house and say that*
624 *we are asking to test you and they can refuse, because some have already been commenting*
625 *that the pills we take are very heavy in the body, but if you follow with the recommendations,*
626 *eat before you medicate, there won't be problems. Some people go out and consume alcoholic*
627 *drinks, while they have just taken pills, it doesn't match, the person has to comply with the rules*
628 *to be able to live"* (SSI 17, member of the community, man, Panjane).

629 **Barriers to home testing of malaria**

630 Regarding the barriers to home testing, participants mentioned some barriers, such as the
631 repeated pricks to collect blood sample and difficulties to collect blood sampling among
632 children because some participants perceived that the blood of the child would finish as
633 children have little blood. In addition, it was also mentioned that some household heads might
634 not accept test for themselves and their family members due to lack of awareness about malaria
635 testing.

636

637 *“Difficulties may exist when fieldworkers prick children and the blood doesn't come out, or*
638 *when they prick someone and the blood doesn't come out; when they insist and prick up to*
639 *three times on the same finger the person starts to feel pain. And, when it's a child, if they prick*
640 *several times the blood will finish because the child still doesn't have much blood”* (FGD 07,
641 general population, Mapulanguene).

642

643 *“What might be a hindrance to the activity is if the head of the household does not accept the*
644 *malaria test for himself and his household members because he might not think it is important*
645 *(...). If the householder refuses, it will not be possible to do the malaria test”* (SSI 04, member
646 of the community, man, Magude village).

647

648 **Barriers to pregnancy test**

649 Participants presented several barriers regarding pregnancy test, which included, management
650 of positive pregnancy test disclosure specially when the women's husbands work far from
651 home, existence of difficult groups to preform pregnancy test, perceptions about who should
652 perform a pregnancy test in women, as well as, the fear of family problems.

653

654 Participants agreed that it would be difficult to test and manage pregnancy test results among
655 women whose husbands work and live in South Africa.

656

657 *“There will be problems in my house with my sister-in-law because her husband is not in, he*
658 *went to South Africa. So, if the fieldworkers find out that she is 2 months pregnant while her*
659 *husband has long travelled to South Africa, we need to have a good talk with her. But if it is*
660 *my daughter who is pregnant, there is no problem. You can tell me”* (FGD 07, general
661 population, Mapulanguene).

662

663 *“I think the problem will arise when fieldworkers find that a woman has 2 months pregnant*
664 *while her husband has been in South Africa for more than 5 months; but this can become a*
665 *problem if the fieldworkers disclose this information because the husband’s parents will want*
666 *to know where she got the pregnancy; and that can be a problem. So, to prevent this problem,*
667 *fieldworkers, first should ask whether the household head is in or not. If the head of household*
668 *is in South Africa, we will be afraid to test their wives, because if we test, it may cause*
669 *confusion”* (SSI 17, member of the community, Panjane).

670

671 The male participants, particularly the ones working far from their homes, raised a concern
672 regarding the disclosure of pregnancy test. The concern was that the disclosure of pregnancy
673 in their absence could create worries as the community would be the first to know, and they
674 might not certify if their wives were faithful. Thus, they requested that the disclosure of the
675 pregnancy test should be a secret.

676

677 *“Participant 3: Regarding the difficulties of pregnancy testing for women, we request that your*
678 *fieldworkers who will be distributing pills, have confidentiality because from my wife's side, I*

679 work and stay a long time on duty, I end up staying 2 months without coming back. I may think
680 that my wife has nothing [pregnancy] while she is pregnant. So, if there is a leak that my wife
681 is pregnant and I don't know, nor have I seen; excuse me, but we need to be clear, because I
682 will no longer know if that pregnancy is mine or not. Your fieldworkers should have
683 confidentiality; (...) you didn't come to destroy our homes, you came to help us, so we ask for
684 confidentiality when it is proven that women are pregnant.

685 *Participant 5: I agree with what the colleague said. It would be good if fieldworkers could test*
686 *and say how many months of the pregnancy: one or 2 months; because I can stay in South*
687 *Africa (...) 3 or more months working outside home and, the fieldworkers find out that my wife*
688 *is 2 months pregnant, but I have been outside home for more than 3 months (...). Then when*
689 *they find out that she is pregnant, the fieldworkers cannot talk in the community because they*
690 *have not come to destroy our homes” (FGD 08, general population, Mapulanguene).*

691

692 Regarding the difficult groups to perform pregnancy tests, both adult women and men,
693 community health workers and community leaders mentioned adolescents. They predicted that
694 adolescents may refuse the pregnancy test at home due to fear of their parents, because if they
695 are tested positive, their parents would know that they are pregnant and this can be a family
696 issue as they might be hiding the pregnancy.

697

698 *“The ones who usually deny pregnancy test are the girls. Since the test will be done at home,*
699 *they know that if they test me here where the breast is, she will find out that I am pregnant”*
700 *(FGD 09, general population, Mahele).*

701

702 *“Girls tend to hesitate to take the pregnancy test. They say they are not pregnant while they*
703 *are hiding” [pregnancy] (SSI 10, community leader, Mapulanguene).*

704 Adolescent, however, said that they were not afraid of pregnancy test. They added that who
705 had to decide about pregnancy test for them were their parents. They perceived that their
706 parents may not allow them to do pregnancy test due to social norms. They explained that if
707 they are found pregnancy they had to inform their mothers, and not their fathers or the mother
708 and the father at the same time.

709

710 *“Mums might not accept their daughters taking the pregnancy test because if me and my*
711 *parents, mummy and daddy are sitting in the same place, no matter how much something*
712 *forbidden happens to me [menstruation or pregnancy] I can't tell my dad. I have to go and tell*
713 *my mummy because I don't know anything yet, I'm underage, they tell me to do this, this and*
714 *this, and I say 'that's fine thank you'. Then mummy might not accept that I do pregnancy test in*
715 *front of my daddy because he will know the results immediately”* (SSI 01, adolescent, Magude
716 village).

717

718 Some participants, particularly women of reproductive age, said that some household heads
719 might not accept their wives to perform a pregnancy test because most men perceived that a
720 pregnancy test must be performed by a woman and not by a man. Participants added that some
721 women might refuse pregnancy test due to fear of violence of their husbands.

722

723 *“The group that might not allow women to do the pregnancy test are men, because they think*
724 *that a man has no right to test pregnancy on a woman, only a woman can test pregnancy on*
725 *another woman”* (SSI 17, member of the community, woman, Panjane).

726

727 *“Women may refuse pregnancy testing for fear of violence of their husbands; this can happen.*
728 *Some men may be violent to their wives if they accept the test without their consent”* (FGD 10,
729 general population, Magude village).

730
731 However, other participants, particularly men, said that women of reproductive age do not like
732 to do pregnancy test at home because they said that if they wanted to know about their
733 reproductive health, they would go to the hospital.

734
735 *“There are many women [of sexually reproductive age] who do not like to take a pregnancy*
736 *test. When they are talking on the street, they say that 'testing people is not good, because if I*
737 *want to have a baby, I know the way to the hospital, I know how to do it, testing people is not*
738 *good'. (...). It has been more the women who deny the pregnancy test because they say that they*
739 *know where to get help, which is in the hospital”* (SSI 04, household head, Motaze).

740
741 Other participants said that some women might deny pregnancy test due to fear of pregnancy
742 disclosure within the family. Additionally, they said that some women might also make use of
743 pills distributed to prevent malaria to do the abortion of unwanted pregnancy, as they are
744 already aware that malaria pills may cause abortion.

745
746 *“Other women may refuse to do the pregnancy test if they know they are pregnant and they did*
747 *not want to [unwanted pregnancy], and they may want to take the pills without testing to take*
748 *advantage of the pregnancy [have an abortion] ... because in the other malaria campaign*
749 *[MDA] it was said that if you take pills when you are pregnant, the pregnancy will come out*
750 *[you can have an abortion]. But, other women can refuse to be tested because it can be found*
751 *out that they are pregnant Our daughters may not know that they are pregnant, but after*

752 *the test they will know and we will also find out and ask them about the pregnancy”* (FGD 09,
753 general population, Motaze).

754

755 **Barriers to administration of malaria pills at home**

756 All participants pointed out some barriers that can hinder the uptake of malaria pills. These
757 barriers included people’s perception and habits about when to take pills, side effects, lack of
758 compliance of the dosage, lack of decision-making of the household head, conflict of
759 prescription between the recommended malaria pills and local traditional medicines, lack of
760 adequate information, and existence of groups who can resist to take pills.

761

762 Regarding people’s perceptions about when to take pills, some healthcare professionals
763 mentioned that most members of the community perceived pills as substances to be taken when
764 they are sick, and it would be challenging to request people to take malaria pills while they
765 were not feeling sick.

766

767 *“I think that there will be some barriers because our communities, the characteristic of our*
768 *communities, is to take some pills when they are sick. So, when you arrive in the community*
769 *and tell people to take pills while they do not feel sick, then this ends up creating a situation*
770 *that is not good for the community. So, this is the main barrier that even we as an institution,*
771 *we have been facing because they only take pills when they are sick”* (SSI 04, healthcare
772 professional, Mahele health facility).

773

774 In fact, to substantiate healthcare professionals’ predictions, some participants, particularly
775 household heads and adolescents, confirmed that they would not take malaria pills unless the

776 test shows that they have malaria, even if their neighbours or other members of the family were
777 tested positive to malaria.

778

779 *“(...) I cannot accept taking pills just because they tested and found that my neighbour had*
780 *malaria while my test was negative, because they tested to know if I have malaria, and they*
781 *told me that I don't have malaria; and then if they give me pills to take; that I cannot accept”*
782 (SS 01, household head, Panjane).

783

784 *“I can't accept to take pills because I don't have malaria, even if my neighbour was detected*
785 *malaria in the hospital”* (SSI 01, adolescent, Panjane).

786

787 Another barrier was regarding participants' previous experience about malaria pill's side
788 effects. Some participants said that some people might not accept taking malaria pills because
789 when they took in malaria previous campaign (MDA), they experienced dizziness.

790

791 *“It will be difficulties because I believe that not all [people] will want to take the pills, they will*
792 *have doubts, because of the reactions of the pills. From what I have experienced, I believe that*
793 *at the time of the campaign people were not explained why they had to take pills, what might*
794 *happen after taking the pills. This information would have prevented people to get panic”* (SSI
795 06, healthcare professionals, Magude health facility).

796

797 *“People may not take the pills because of dizziness, because the pills cause dizziness; they*
798 *make you dizzy. It happened with my grandson, he got dizzy, he was shaking after taking*
799 *malaria pills in the second day. We went to the hospital and they prescribed other pills that we*

800 *have to buy from the pharmacy outside, but the pharmacy was closed because it was Sunday,*
801 *and it was difficult to manage the situation”* (FGD 11, general population, Magude village).

802

803 Lack of compliance with malaria pills dosage was also reported as a barrier. The discourse of
804 some participants pointed out that some people only took the pills in the first day, in the
805 presence of the fieldworkers. But, they did not adequately take the pills in the following 2 days
806 as they had been recommended.

807

808 *“I think that there are still difficulties in taking the pills because some people, when the field*
809 *worker leave those pills that they have to take in the absence of the staff, some don't take it. I*
810 *can believe that some don't take it, this is because the same person... the same family member,*
811 *whose other was tested positive, when they leave it for him to take it, he doesn't take it, and*
812 *three days later he shows up at the health facility with malaria, and sometimes, when we ask if*
813 *he took the medicine that fieldworkers left, and he says yes, while he simply didn't take it”* (SSI
814 2- healthcare professional, Magude village health facility).

815

816 *“We, the Mozambican people, are lost because when we take the pills, we put them under the*
817 *pillow, you think that you are already better that day, because you took the first dose. Most*
818 *people do not take pills until finishing the dosage. They interrupt it and drink beer, but they*
819 *won't get better, they will always be in hospital because they have transgressed the norms,*
820 *crossed the line, and they will always get sick”* (FGD 01, general population, Panjane).

821

822 Healthcare professionals and community health workers mentioned the absence of the
823 household head or lack of his consent as a barrier to all family members to take the pills.

824

825 *“One of the barriers would be if field workers arrive in a household where the head of*
826 *household is not there, practically that person will not be attended to. Fieldworkers will not be*
827 *received, they will have to wait for the head of household to authorise, then they will not be*
828 *able to work”* (SSI 05, healthcare professional, Panjane health facility).

829

830 According to the participants, the intake of traditional medicines might be another barrier to
831 home intake of the drug. Community leaders and healthcare professionals mentioned that there
832 might be a conflict between the recommended malaria pills and local traditional healers’
833 practices. They explained that some traditional healers may refuse malaria pills alleging that
834 they treat it themselves. Other said that children or other people might not be allowed to take
835 malaria pills at the same time that are taking traditional medicine prescribed by the traditional
836 healers.

837

838 *“Another barrier would be to get to the household head, let's suppose that the head of that*
839 *household is a healer, he thinks he can treat malaria, or he can only treat the person who has*
840 *malaria, not those people who don't have it, he knows how to do things. He will say: no, here*
841 *at home these are the rules, I treat it, no one get sick of malaria (...). It would be difficult to*
842 *convince him because he thinks that he can treat himself, he is already a doctor, he calls himself*
843 *a house doctor, it would be difficult to medicate this healer, because he thinks that he is also a*
844 *professional. And he may not let the fieldworkers do their job because of some myths. You can*
845 *explain to him that there is no traditional treatment for malaria, but he still has these taboos”*
846 (SSI 05, healthcare professional, Panjane health facility).

847

848 *“For example, here in Mapulanguene [name of administrative Post], there are traditional*
849 *healers who prescribe traditional medicine to children and other people. You may come to a*

850 *family, and they can say: "today I gave traditional medicine to my son, and he/she cannot take*
851 *malaria pills", you may find that"* (SSI 10, community leader, Mapulanguene).

852

853 The future possibility of getting malaria even after taking the pills was mentioned as another
854 barrier. Some healthcare professionals said that some people might ask "*for how long they will*
855 *get malaria after taking pills?"*, and if they are aware that even taking the pills, after sometimes
856 they will still get malaria, they might not adhere to the pills.

857

858 "*One of the barriers would be, for how long will I not have malaria, for how many years? That*
859 *question anybody can ask, as long as they don't have exact information about the drug, they*
860 *can ask this question for how long, if it's for a short time, he or she may reject saying: 'there's...*
861 *I don't have malaria, what's the point if after so long I'll have malaria"* (SSI 05, healthcare
862 professional, Panjane health facility).

863

864 Indeed, some participants with previous experience of malaria pills treatment questioned the
865 usefulness of the malaria pills because they still got sick even after taking the pills.

866

867 "*We heard that malaria will end after taking the pills, we took the pills but we still get sick with*
868 *malaria"* (FGD 08, general population, Mapulanguene).

869

870 Almost all participants said that the main barrier would be the lack of adequate information
871 about the importance of pills for malaria prevention. They also added that another barrier would
872 be lack of information about how and when to take the malaria pills. Participants reported that
873 not all fieldworkers offered adequate information before requesting people to take the pills.

874

875 *“Inform your fieldworkers who are distributing pills, in the beginning there were problems*
876 *because people said that: ‘I cannot take pills because we had not eaten’, and we are not yet*
877 *well clear in our heads. We asked that when the campaign starts, also bring food because we*
878 *thought we could take pills after the meal; while it is not. We went to find out that it was a*
879 *mistake of some fieldworkers. It is not everything that they tell us, that they explain clearly in*
880 *the households. Some fieldworkers misrepresent the information, it is important that they come*
881 *while they have clear knowledge of what they are going to do. They say that these pills can*
882 *only be taken after the meal”* (FGD 08, general population, Mapulanguene).

883

884 In fact, some healthcare professionals experienced the impact of this misinformation in some
885 communities. They reported that some people refused to take pills unless it was also
886 accompanied with some food distribution.

887

888 *“The big barrier, which is not even my opinion, but it is what I have experienced in the*
889 *community, is that once I went to talk to my neighbour, I tried to convince her to take the pills,*
890 *but she did not accept for the following reason, she says: “first they should give us food, they*
891 *always only come to give us pills after pills, first you have to eat to be able to take pills. Why*
892 *don't they give us food? They are only handing out pills”, this is one of the barriers that is*
893 *common in the community”* (SSI 07, healthcare professional, Magude village health facility).

894

895 Some community health workers and general population who participated in this study reported
896 that it would be difficult to convince members of the community to take pills because the
897 fieldworkers were outsiders, and local community health workers or members of the local
898 communities were not involved in the campaign.

899

900 *“In the previous campaign, it would have been possible to eliminating malaria, but it was not*
901 *possible because outsiders were recruited and worked in the campaign. We had problems*
902 *because they [fieldworkers] did not work with us [local community health workers]. So, in*
903 *some households, they had difficulties because people did not accept to take pills as they did*
904 *not trust those who were distributing pills”* (SSI 04, community health workers,
905 Mapulanguene).

906

907 With regards to the groups that are resistant to take malaria pills, participants presented mixed
908 perceptions. Most of the participants said that young people, particularly boys and drunken
909 people were mostly the groups that would refuse to take pills.

910

911 *“The group that refuses to take pills is the group of boys, because I have a boy who refuses to*
912 *take it, he does not accept it, but we take it [adult men and women] (...). We don't succeed to*
913 *convince young people to take pills. They will not take it. You can meet them here at the gate*
914 *and say that you need person 'X', he will tell you that he has just left, while it's him. The*
915 *fieldworker will leave, but if I tell the fieldworker that 'that's him' is the person they are looking*
916 *for; he can turn and kill me here at home”* (FGD 10, general population, Magude village).

917

918 *“We drink beer, when you arrive, I will have already drunk beer, they [fieldworkers] give us*
919 *medicine and tell us to take it, while we are already drunk. Even those pills that others say are*
920 *bad, in reality, they don't make you sick, when the fieldworkers arrive they find me drunk and*
921 *they tell me to take [pills] there in the presence of them [fieldworkers], so, the person gets*
922 *drunk twice”* (FGD 06, general population, Magude village).

923

924 Adolescents and healthcare professionals, however, perceived that adult people working in
925 South Africa and elderly were groups that would mostly refuse to take pills.

926

927 *“The majority, the new ones, (...) I'm talking about the young people, those don't have*
928 *problems. I believe that a big part of the people who inhibit family members from taking pills,*
929 *are adult people who work in South Africa, because they don't know where we are coming from*
930 *and where we are going to. He didn't get the information in the first hand, or hear it from*
931 *someone; he only heard rumours, and he ends up inhibiting his relatives from taking the pills”*
932 (SSI 08, healthcare professional, Magude village health facility).

933

934 *“The elderly and fathers [adult people] only take pills when they want, others only take them*
935 *the first day, the next day they don't take them, and they say: "as soon as they [field workers]*
936 *are gone, they won't see that we are not taking it" and, they leave the pills”* (SSI 10, adolescent,
937 Panjane).

938

939 **Perceptions about ways to uptake adherence to reactive focal mass drug** 940 **administration**

941 All participants of different groups of the community perceived that several strategies could be
942 used to uptake community participation in rfMDA, including the need for more awareness
943 about rfMDA, planning of the activities, access to accurate information about antimalarial pills,
944 supervision during the administrations of the pills and improvement of attitudes of
945 fieldworkers.

946

947 The access to accurate information was considered crucial to uptake adherence to rfMDA.
948 Thus, participants suggested more community engagement that includes door to door

949 sensitization, use of entertainment activities, such as theatre during sensitization, as well as the
950 inclusion of community leaders during the campaign and rfMDA implementation.

951

952 *“Community leaders should be informed to gather the population and inform them about the*
953 *malaria campaign. They should be informed about the month and day when the fieldworkers*
954 *will come to the community. People should be informed about the importance of the pills and*
955 *appeal to the population not to run away during the fieldworkers' visit. When the campaign*
956 *starts the community leaders should be informed and they should accompany the fieldworkers*
957 *because they are the ones who know the communities”* (FGD 09, general population, Motaze).

958

959 *“Sensitization of the population should be done in a timely manner, about one month before*
960 *the campaign starts. Mobilization should be done house to house or hold meetings for these*
961 *mobilizations. Talk about things that people will understand and prevent misrepresented*
962 *information. Mobilise the locality chiefs and secretaries of the neighbourhoods so that they*
963 *mobilise the populations because they are the ones with power”* (SSI 06, healthcare
964 professional, Magude health facility).

965

966 Most participants also said that they were often busy with their everyday activities, and they
967 might not be at home during the visit of the fieldworkers. So, they proposed that rfMDA
968 activities should be well planned, people and community members should be informed
969 beforehand about the day and time the fieldworkers will visit, and also, they should comply
970 with the planned day. Participants perceived that this would prevent absence of the members
971 of the household.

972

973 Almost all participants reported that it was important to give accurate information about
974 antimalarial pills in advance. They explained that people should be informed about the
975 importance of the pills, explain its adverse effect and evaluate if some people are sick of some
976 disease contraindicated to antimalarial pills.

977

978 *“People should be told why it is important to take pills, what the pills are for, and whether the*
979 *person is sick. This is because you may meet the people while they are not sick and they may*
980 *wonder why they have to take pills if they are not sick. Then, you should explain what those*
981 *pills are for. I think that after explanation people will accept to take the pills”* (SSI 08,
982 adolescent, Magude village).

983

984 *“Other fieldworkers just come and give us pills, they don't explain what they are for. People*
985 *do not know what prevention is, you have to explain well, say that they should take tablets to*
986 *prevent malaria”* (SSI 07, member of the community, man, Mapulanguene).

987

988 *“First, it would be better to explain what these pills are, their adverse effects: this can happen*
989 *and that, you can do this at home; advise people that if they feel ill they can go to the hospital,*
990 *etc. I think the big problem is the adverse reactions of the pills. You should explain to the*
991 *patient that it may happen, this, this, this..., that they shouldn't be alarmed, it's natural, it's the*
992 *effect of the medication, after a while it may pass, if it doesn't, they can go to hospital”* (SSI
993 06, healthcare professional, Magude village).

994

995 Some participants explained that some fieldworkers recommend drunken people to take
996 antimalarial pills, while others do not give pills to drunk people at all. These participants

997 perceived that people should not take pills after drinking alcohol, and they suggested that pills
998 should be left at the household, and people would take in the following day.

999

1000 *“Usually, the fieldworkers arrive late and find people already drunk. But, some fieldworkers*
1001 *say even if the person is drunk, they recommend him to take the pills. So, we are used to it, that*
1002 *if you have just drunk, you should not take pills. We deny taking the pills after drinking”* (FGD
1003 05, general population, Magude village).

1004

1005 *“If the person is drunk, the fieldworkers should leave the pills, and leave recommendations*
1006 *with a person who is not drunk. He will take it the next day when the drunkenness is finished”*
1007 (FGD 06, general population, Magude village).

1008

1009 Some participants suspected that not all people comply with the recommended dosage of the
1010 antimalarial pills. To overcome this problem, healthcare professionals proposed supervision
1011 during the administrations of the pills. They explained that the fieldworkers should visit the
1012 households and monitor the compliance of malaria pills intake during the recommended days.

1013

1014 *“Fieldworkers could stay in the community for some period of time to monitor pills-taking. Tell*
1015 *the patient that I will come back tomorrow to the house to see if he has taken the pills, to find*
1016 *out about adverse reactions, if there was anything, or if he happened to feel unwell (...). So,*
1017 *the fieldworkers would distribute and monitor the pills at the same time. What sometimes*
1018 *betrays us is: I leave the pills and say: ‘today you take it, tomorrow you take it’. The person*
1019 *takes it today, then he understands that he is not sick, and the person stops taking the pills”*
1020 (SSI 01, healthcare professional, Mahele health facility).

1021

1022 *“To comply with the dosage, I think people should take the pills in the presence of the*
1023 *fieldworkers, and not let the patient decide to take it in the following days alone. He can have*
1024 *a party and stop taking the pills, and he can take them when he wants. The lack of monitoring*
1025 *can cut the effect of the medicine itself”* (SSI 08, healthcare professional, Magude village health
1026 facility).

1027

1028 A considerable number of participants appealed to the improvement of fieldworkers’ attitudes
1029 as they perceived that fieldworkers do not often comply with the local cultural norms such as
1030 greeting the members of the households, explaining the reason why they are visiting that
1031 household and explaining why and how to take antimalarial pills. Participants expected humble
1032 and respectful fieldworkers, and they suggested that fieldworkers should not be young people.

1033

1034 *“Participant 1: It is necessary that when a fieldworker arrives at a house he should greet, after*
1035 *he has greeted we will give him chair to sit, and then he communicates to us about the reason*
1036 *why he came to visit us, he explains to us how the pills are taken. But there are some*
1037 *fieldworkers who are very young who create difficulties...they don't explain, they don't know*
1038 *how to answer adult people.*

1039 *Participant 3: Even if they are not young fieldworkers, some when they arrive they say: "you*
1040 *have to take pills, you also have to take them here", even when someone has asthma, they say:*
1041 *"you have to take, take pills. So, that's what we don't want.*

1042 *Participant 5: (...) They [fieldworkers] should explain their mission well and in a good way so*
1043 *that they can give us pills and we take them, in as much as we are satisfied also; they should*
1044 *not prick the heart (not offend) the person, because if they prick the heart the person already*
1045 *takes the pills unsatisfied”* (FGD 05, general population, Magude village).

1046

1047 *“Participant 1: Fieldworkers should be people with respect, they should not come with pride,*
1048 *others come with their own problems and put out on me, we will not agree to each other, and*
1049 *some may be sent away.*

1050 *Participant 4: A fieldworker has to be someone who works with an open heart and calm, so*
1051 *that we can also receive him well”* (FGD 11, general population, Magude village).

1052

1053 Some participants also claimed that fieldworkers were outsiders of the community. They
1054 proposed training of some local fieldworkers who could understand local language, practices
1055 and culture, and who would build a strong relationship with the local communities.

1056

1057 *“Among the fieldworkers, they should include ladies or girls from our area. These people know*
1058 *the local life, it would be simple for them to greet “how are you”, have you ever felt something*
1059 *“X”; they would be able to explain the local people in a good manner”* (DGF 07, general
1060 population, Mapulanguene).

1061

1062 *“The rMDA programme should involve local communities; involve someone from the*
1063 *community, it would be better to train someone local that the communities know, it would*
1064 *create confidence in the community, it could be a huge help. The knowledge of that person*
1065 *could help them to join the campaign. Most of the time, it is not because the person does not*
1066 *want to take pills, but the reason is that the fieldworkers distribute the pills and then disappear,*
1067 *they have no connection with the local communities. Some people resist taking pills because of*
1068 *lack of trust to the fieldworkers; because they don't know those people [fieldworkers]. The*
1069 *population may think maybe the fieldworkers want to kill them; if someone dies who will they*
1070 *turn to? For example, if I am a local fieldworker, I arrive at my neighbour's house, she may*
1071 *even resist a bit to take pills, I try to convince her, (...) she ends up having a different idea, and*

1072 *accept. She will think that my neighbour can't give me this to kill me, if she kills me I'll go to*
1073 *her house (...). So, if we involve the community a little more, if local people are also into the*
1074 *programme, I think it will be better, we will have a greater adherence, and the programme*
1075 *goals can be achieved"* (SSI 05, healthcare professional, Panjane).

1076

1077 **Discussion**

1078 This qualitative study analysed acceptability and perceived barriers to reactive focal mass drug
1079 administration (rfMDA) among community members exposed to community engagement
1080 campaigns and malaria elimination interventions in rural Magude district. The study found that
1081 all group members of the community included in the sample accepted rfMDA regardless the
1082 place of residence. This acceptability was associated to the awareness about rfMDA as a result
1083 of community engagement campaigns. The perceptions that rfMDA, like the previous MDA,
1084 would prevent malaria, improve people's health status, and the fact that the procedures used
1085 would reduce the cost of transport to the health facility also influenced rfMDA acceptability.
1086 Moreover, participants perceived malaria as a local health concern, and they believed that
1087 rfMDA could help to eliminate it. This result is consistent with previous studies in the same
1088 study setting [7,9]. In particular, these previous studies found that high acceptability of MDA
1089 was influenced by the perception of malaria as a main health problem [9] and community
1090 engagement campaign [7]. Moreover, others studies undertaken in Tanzania [17], Eswatini
1091 [18] and Cambodia [19] showed that perceived risk for malaria influenced acceptability of
1092 malaria treatment.

1093

1094 The results of this study also reveal that the procedures used in rfMDA were accepted despite
1095 mixed perceptions about the process of management of pregnancy test outcomes and
1096 administration of antimalarial pills to all members of the community. The acceptability of the

1097 rfMDA procedures derived from the awareness of the communities that those were
1098 recommended procedures to access antimalarial pills; perceptions of the procedures as norms
1099 of the health facility, the willingness to know one health status, and recognition that malaria
1100 could be hidden in the body and transmissible to other members of the community. This result
1101 highlights high awareness of malaria transmission and desire to its elimination. Like other
1102 studies in the Gambia [20] reported, the acceptance of antimalarial pills without malaria
1103 symptoms, may reveal a strong sense of responsibility of the participants of this study toward
1104 protecting themselves, their family members and their neighbours.

1105

1106 Despite community acceptability and high awareness of the procedures used in rfMDA, some
1107 procedures such as malaria testing in children and pregnancy testing were not often welcome,
1108 and they could hinder the uptake of rfMDA campaign. The results of this study showed that
1109 participants were reluctant to perform malaria test among children as they perceived it could
1110 harm children's health by reducing the amount of blood in their body. In addition, participants
1111 were concerned about pregnancy test decision-making and pregnancy testing result disclosure
1112 because it could contribute to disagreement among couples, especially when a wife does a test
1113 without her husband consultation, or if other members of the community access the information
1114 about positive pregnancy test before the husband. Moreover, participants had experience of
1115 previous antimalarial pills, and they were concerned about drug adverse reactions, and others
1116 were reluctant to take drugs without malaria symptoms. These barriers have also been
1117 documented in previous studies [18, 21-24]. Furthermore, like previous studies [25] have
1118 reported, lack of access to accurate information, spread of misinformation about malaria
1119 intervention, being unable to drink alcohol while taking DHAp [7], lack of trust of
1120 fieldworkers, and the demand of food as precondition to take DHAp are potentials barriers to
1121 rfMDA.

1122 The barriers identified in this study reflect the need of more community engagement in malaria
1123 campaign, which include the community appropriation of the malaria elimination process,
1124 involvement of community leaders in the whole process, and training of local community
1125 health workers and other local eligible people to serve as fieldworkers. This strategy could
1126 contribute to community self-appropriation of the malaria elimination campaign, and it would
1127 build a strong relationship between fieldworkers and the community. As the participants
1128 suggested, local fieldworkers are more appropriate to work with communities than outsiders as
1129 they are more prone to follow and respect the local cultural norms, and this could help to build
1130 a strong relationship with the communities.

1131

1132 Community engagement is crucial, and it has been recognised as central to malaria campaign
1133 uptake [26, 27]. Several strategies could be used to strengthen rFMDA, including house-to-
1134 house visits to inform the population about the planned campaign, and provide non-monetary
1135 incentives, such as bed nets, food or school material to children or other things that can
1136 incentivise people to participate in the malaria campaign. Incentivising communities has been
1137 found as a valid community engagement strategy in a similar campaign in Cambodia [27],
1138 where it contributed to the increasing participation of the population in malaria campaign.

1139

1140 **Limitations**

1141 This study is limited to the study setting and the selected participants, and the results could not
1142 be generalized to other settings. Given to the nature of the qualitative methodology that guided
1143 this study, the study sampling was not representative of the study population, and it was subject
1144 to sample-bias because only some participants, who were considered as representing specific
1145 groups of the community, were selected according to the study objectives. This sample strategy

1146 led to exclusion of other community members who could have different views about the study
1147 object.

1148

1149 **Conclusion**

1150 The community of Magude district found rfMDA and its procedures acceptable to malaria
1151 intervention. This acceptability was associated to rfMDA awareness deriving from community
1152 engagement, previous experience of malaria similar campaigns, such as MDA, and willingness
1153 of the community to eliminate malaria. However, some barriers, such as lack of decision-
1154 making on pregnancy test among women, fear of pregnancy test results, lack of accurate
1155 information about rfMDA, fear of DHAp adverse reactions, and reluctance to take drugs
1156 without malaria symptoms might affect rfMDA campaign. Thus, there is a need to continue
1157 with community engagement and built community self-appropriation of malaria programme.
1158 This could include involvement of local community leaders, before and during rfMDA, and
1159 local community health workers and other local people who can work as fieldworkers during
1160 rfMDA campaign. Including community's members in rfMDA implementation could optimize
1161 rfMDA uptake, and therefore contributing to malaria elimination.

1162

1163 **Supporting information**

1164 **S1A Appendix. Semi-structured interview (SSI) guide for household heads, women of**
1165 **reproductive age, adolescents, members of the general community and community**
1166 **leaders (Portuguese version).**

1167 **S1B Appendix. Semi-structured interview (SSI) guide for household heads, women of**
1168 **reproductive age, adolescents, members of the general community and community**
1169 **leaders (English Version).**

1170 **S2A Appendix. Semi-structured interview (SSI) guide for healthcare professionals and**
1171 **community health workers (Portuguese version).**

1172 **S2B Appendix. Semi-structured interview (SSI) guide for healthcare professionals and**
1173 **community health workers (English Version).**

1174 **S3A Appendix. Focus groups discussion (FGD) guide for general population: men and**
1175 **women (Portuguese version).**

1176 **S3B Appendix. Focus groups discussion (FGD) guide for general population: men and**
1177 **women (English version).**

1178 **S4 Table. Consolidated criteria for reporting qualitative studies (COREQ): 32-item**
1179 **checklist.**

1180

1181 **Acknowledgement**

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1183 in this study and sharing their experiences and views with us. We also address our thanks to
1184 the data field team (field supervisors, data collectors and transcribers).

1185


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Supporting Information

S1A Appendix. Semi-structured interview_ Portuguese
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Supporting Information

S1B Appendix. Semi-structured interview_English
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S2A Appendix. Semi-structured interview_Portuguese
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S2B Appendix. Semi-structured interview _English
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S3A Appendix. Focus groups discussion_Portuguese
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S3B Appendix. Focus groups discussion_English
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Supporting Information

S4 Table. Consolidated criteria (COREQ).docx



1 Full title:

2 **Acceptability and pPerceived bBarriers to rReactive fFocal mMass**
3 **dDrug aAdministration in the cContext of a mMalaria**
4 **eElimination pProgram in Magude district, Southern**
5 **Mozambique: A qualitative study**

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7 Short title:

8 **Acceptability and bBarriers to rReactive fFocal dDrug**
9 **aAdministration in Mozambique**

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28 **Abstract**

29 This study analysed acceptability and perceived barriers to reactive focal mass drug
30 administration (rfMDA) among community members exposed to community engagement
31 campaigns and malaria elimination interventions in Magude district, following mass drug
32 administration (MDA) in the same district. The study used a formative qualitative study design
33 consisting of 56 semi-structured interviews with community members, including community
34 leaders, household heads, women of reproductive age, members of the community and
35 adolescents, 4 semi-structured interviews with community health workers, 9 semi-structured
36 healthcare professionals; and 16 focus group discussions with adult general population. A
37 content thematic analysis approach was used to analyse the data. The results of this study
38 showed that rfMDA was accepted due to awareness about the intervention, experience of
39 previous similar programme, such as MDA, and due to favourable perceptions built on the
40 believe that rfMDA would help to prevent, treat and eliminate malaria in the community.
41 Perceived barriers to rfMDA include lack of access to accurate information, reluctance to take
42 pregnancy test, concern on drug adverse reactions, and reluctance to take antimalarial drugs
43 without any symptom. In conclusion, the community found rfMDA acceptable for malaria
44 intervention. But more community engagement is need to foster community involvement and
45 self-appropriation of the malaria programme elimination.

46

47 **Keywords:** Acceptability, Barriers, Magude, Malaria, Reactive focal mass drug
48 administration.

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Introduction

Mozambique is one of the sub-Saharan countries that has made significant progress toward malaria elimination [1,2]. However, the country is still considered one of the 6 countries with the highest malaria burden in the world, contributing with an estimate of 4% of malaria cases in 2018 [2]. Several strategies have been implemented in the country to accelerate malaria elimination in southern Mozambique [3]. These strategies include increasing the coverage of long-lasting insecticidal nets (LLINs), yearly rounds of universal indoors residual spraying (IRS), improvement of case management and surveillance system throughout the country [3,4,5]. These strategies are parts of the recommended tools of the World Health Organization (WHO) Global Technical Strategy (GTS) for Malaria 2016-2030 [6].

Magude district, in particular, has been benefiting from a project led by the Manhiça Health Research Centre (CISM) since 2015, which aims to eliminate malaria. The project consisted in implementation of a comprehensive mixed interventions that included LLINs, IRS and four rounds of mass drug administration (MDA) to all the eligible members of the population of Magude between 2015 and 2017 using the half-life drug dihydroartemisinin-piperaquine (DHAp) [5,7]. These interventions were implemented following different assessment and baseline studies on malaria elimination in the district [8-10] that informed the perceptions of the community before and during the implementation of the project.

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73 Some factors influenced the implementation of malaria elimination interventions in Magude
74 district, including refusal of IRS and LLINs use [9], absenteeism of the household head which
75 compromised the decision-making in participation of MDA campaign, and fear of DHAp and
76 its adverse event [7]. Notwithstanding these constraints, the implementation of the
77 comprehensive mixed intervention has resulted in reduction of malaria case in Magude district
78 [5].

79
80 Despite a promising of the implemented mixed intervention in malaria case reduction, the
81 elimination of malaria in the district has not yet been achieved. In a such case, the WHO
82 recommends reactive epidemiological surveillance, which is an intervention suitable to the late
83 stages of the fight towards malaria elimination [11]. In this context, a reactive focal mass drug
84 administration (rfMDA) was implemented in Magude district, southern Mozambique, from
85 July 2017 to January 2020 to maintain the gains and prevent an upsurge of malaria transmission
86 after MDA.

87
88 rfMDA consisted of following up all passively malaria detected cases at health facilities and
89 community health workers to their households and administering the antimalarial drug DHAp
90 to all their family members and neighbours. When a household was visited, the fieldworkers
91 explained the reasons of the visit; enrolled the household members to the study through
92 informed consent forms; administrated electronic questionnaires of all household members
93 gathering sociodemographic and malaria risk and prevention information; evaluated each
94 household member's eligibility to be administered DHAp, which included pregnancy testing
95 to consenting women of reproductive age and malaria rapid diagnostic test to all eligible
96 members of the households; and administrated DHAp according to each member's age. The
97 administration of DHAp followed the same procedures used in MDA in the same district

98 [8,5,7]. The implementation of rfMDA strategy was complemented by a community
99 engagement campaign incentivising the population to seek healthcare upon the presentation of
100 fever and to adhere to the reactive surveillance intervention.

101
102 This study analysed acceptability and perceived barriers to reactive focal mass drug
103 administration (rfMDA) among community members exposed to community engagement
104 campaigns and malaria elimination interventions, such as healthcare providers, community
105 health workers, community leaders, women of reproductive age, adolescents and general
106 members of the community in Magude district.

108 **Methods**

109 **Study setting**

110 The study was carried out in a rural Magude district located in the northwest of Maputo
111 province, southern Mozambique. In 2017, the district has 63,691 inhabitants and 14,583
112 households [12] distributed in 5 Administrative Posts: Magude village, Motaze, Mahele,
113 Panjane and Mapulanguene [13], and the study covered all these 5 Administrative Posts. There
114 are 9 rural health facilities, 1 referral health centre and 27 community health workers (CHWs)
115 throughout the district [14]. CHWs provide diagnosis and treatment of malaria and other
116 diseases, such as diarrhoea, pneumonia and refer patients with signs of sickness requiring high
117 medical attention [15]. Both health providers and community health workers engage in
118 community sensitization about malaria using a social behaviour change communication
119 approach of the Plan of the National Malaria Control Program (NMCP) [16]. The level of
120 malaria in the district is considered moderate, with about 200 cases per 1000 prior to MDA
121 [14]. The district has been exposed to malaria prevention strategies, such as malaria case

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122 management using artemether-lumefantrine, vector control, IRS and the population has been
123 exposed to several malaria research activities before and after Magude project [5,8].

124

125

126

127 **Study design**

128 A formative qualitative study assessed acceptability and perceived barriers to reactive
129 surveillance strategy among community members exposed to community engagement
130 campaign and malaria elimination interventions. The study was undertaken in September 2017
131 before the start of the reactive surveillance intervention and continued during the first two
132 months after the start of the intervention.

133

134 **Sample strategy and sample size**

135 A purposive sampling was performed to select individual members representing different
136 groups in the community. These groups included adult household heads (≥ 18 years old), adult
137 women of reproductive age (18-49 years old), female adolescents (12-17 years old), adult
138 members of the community (≥ 18 years old) and community leaders (≥ 18 years old). The
139 same strategy was used to select adult general population (≥ 18 years old) who composed focus
140 group discussions (FGD). These participants were selected to capture the view and the lay
141 perspective, as well as mapping the barriers with regard to reactive focal mass drug
142 administration. A total of 69 participants of different community groups, comprising individual
143 semi-structured interviews, and 157 participants of the general population, who participated in
144 FGDs, were included in the study (Table 1).

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152 Table 1. Study sample size

Study setting	Individual semi-structured interviews								FGDs (n=16) with general population		
	Household head	Women of Reproductive age	Adolescent	Member of the community	Community leader	Health professionals	CHWs	Total	Men	Women	Total
Magude village	1	1	5	6	6	5	1	25	8	37	45
Motaze	4	3	2	4	0	0	0	13	1	16	17
Mahele	1	3	0	0	1	2	0	7	13	20	33
Panjane	2	1	2	5	2	1	2	15	7	11	18
Mapulangwen	1	2	0	3	1	1	1	9	16	28	44
Total	9	10	9	18	10	9	4	69	45	112	157

153

Study setting	Individual semi-structured interviews								FGDs (n=16) with general population		
Administrative posts	Household head	Women of reproductive age	Adolescents	Member of the community	Community leader	Healthcare professionals	Community health workers	Total	Men	Women	Total

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		Reproductive-age					Community				
		1	2	3	4	5	1	2	3	4	5
Magude village	1	1	5	6	6	5	1	25	8	37	45
Motaze	4	3	2	4	0	0	0	13	1	16	17
Mahele	1	3	0	0	1	2	0	7	13	20	33
Panjane	2	1	2	5	2	1	2	15	7	11	18
Mapulanguene	1	2	0	3	1	1	1	9	16	28	44
Total	9	10	9	18	10	9	4	69	45	112	157

155 The study also included healthcare providers who were engaged in malaria campaign and
156 malaria elimination interventions. A purposive sampling was used to select 9 healthcare
157 professionals and 4 CHWs in all the study settings (Table 1). Health professionals were
158 working in the health facilities located in the same communities where the study took place.
159 The community health workers also worked in the same communities in coordination with
160 the local health facilities.

161

162 **Data collection**

163 Semi-structured interviews (SSI) and focus group discussions (FGDs) were used to collect
164 data. Individual SSI were administered to household heads, women of reproductive age,
165 adolescents, members of the community, community leaders, healthcare professionals and
166 community health workers; while FGDs were used to collect data with adult general
167 population. The size of each FGD varied between 8 and 12 members, and each FGD lasted
168 between 60 and 80 minutes. Data collection guides for both SSI and FGDs were designed to
169 capture perceptions of rfMDA, acceptability of the procedures of rfMDA and the reasons for
170 its acceptability, and barriers that could emerge during the implementation of rfMDA. Guides
171 were prepared in Portuguese, and a pilot test was performed in the local language Changana
172 before the beginning of data collection. Based on the pilot test, the guides were refined. SSI
173 were conducted in both Portuguese and Changana, depending on the language preference of
174 the participants, while all FGDs were conducted in Changana. The interviewers, who are fluent
175 in Portuguese and Changana, were trained to conduct SSI and facilitate FGDs. All interviews
176 and FGDs were digitally recorded, and later independently transcribed in Portuguese. The
177 research team controlled the quality and accuracy of the transcriptions.

178

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179 **Data analysis tools**

180 A content thematic analysis approach was used to analyse the data of SSI and FGD. First, data
181 management was conducted using Nvivo 12 (QRS International Pty. Ltd.), a qualitative
182 package for qualitative data analysis, following designed generic outline nodes representing
183 the coding structure. Themes and subthemes emerging from the data were critically discussed
184 until a consensus of the researchers was reached. The final themes were: awareness and
185 acceptability of reactive focal mass drug administration, acceptability of the procedures used
186 in reactive focal mass drug administration strategy and barriers to reactive focal mass drug
187 administration strategy.

188

189 **Ethical considerations**

190 The study ~~was approved by~~ ~~obtained ethical clearance from~~ ~~CISM's Internal Scientific~~
191 ~~Committee Review Board~~ CISM's institutional ethics committee (CIBS-CISM) and the
192 Mozambican Ministry of Health National Bioethics Committee, and it was registered as
193 protocol number Ref:146/2017. All participants received detailed information about the study
194 objectives. A written informed consent was obtained from all participants prior their
195 participation in the study. The study obtained a written informed consent from all parents or
196 guardians of the young adolescents (12-17 years old) included in the study. Moreover, an assent
197 was sought from all young adolescents that participated in this study. Participants were assured
198 about their anonymity and confidentiality throughout the research process. Thus, all
199 participants names were not recorded, and all informed consents, digital records and databases
200 were securely stored at a secure server of CISM.

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Results

The participants of this study included different community groups, general population of the community, healthcare professionals and community health workers. Table 2 and Table 3 summarise the characteristics of participants per community group and general population who participated in focus group discussion respectively. The majority of participants were married or living with a partner, had primary school and worked as farmers.

Table 2. Sociodemographic characteristics of participants per community group

Variables	Community leaders (n=10)	Household head (n=9)	Women of reproductive age (n=10)	Members of the Adolescents (n=9)	Members of the community (n=18)
Sex					
Male	100%(10/10)	77,8% (7/9)	0 (0/10)	0 (0/9)	16,7% (3/18)
Female	0 (0/10)	22,2% (2/9)	100%(10/10)	100% (9/9)	83,3% (15/18)
Educational level					
None	10% (1/10)	33,3% (3/9)	10% (1/10)	0 (0/9)	11,1% (2/18)
Primary school	90% (9/10)	66,7% (6/9)	60% (6/10)	77,8% (7/9)	88,9% (16/18)
Secondary Education	0 (0/10)	0 (0/9)	30% (3/10)	22,2% (2/9)	0 (0/18)
Marital Status					
Single	0 (0/10)	0 (0/9)	30% (3/10)	77,8% (7/9)	5,6% (1/18)
Married or living with a partner	90% (9/10)	100% (9/9)	70% (7/10)	22,2% (2/9)	94,4% (17/18)
Widowhood	10% (1/10)	0 (0/9)	0 (0/10)	0 (0/9)	0 (0/18)
Occupation					
Farmer	100%(10/10)	77,8% (7/9)	80% (8/10)	22,2% (2/9)	77,8% (14/18)
Salesperson	0 (0/10)	11,1 % (1/9)	0 (0/10)	0 (0/9)	5,6% (1/18)
Security	0 (0/10)	11,1% (1/9)	0 (0/10)	0 (0/9)	0 (0/18)
Housewife	0 (0/10)	0 (0/9)	10% (1/10)	11,1% (1/9)	11,1% (2/18)

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Traditional healer	0 (0/10)	0 (0/9)	0 (0/10)	0 (0/9)	5,6% (1/18)
Student	0 (0/10)	0 (0/9)	10% (1/10)	66,7% (6/9)	0 (0/18)
Religion					
Atheism	10% (1/10)	22,2% (2/9)	10% (1/10)	0 (0/9)	0 (0/18)
Christianity	90% (9/10)	77,8% (7/9)	90% (9/10)	100% (9/9)	88,9% (16/18)
Animism	0 (0/10)	0 (0/9)	0 (0/10)	0 (0/9)	11,1% (2/18)

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213 Table 3. Sociodemographic characteristics of focus group discussion participants

Variables	Frequency	%
Sex		
Male	45	28,7
Female	112	71,3
Education level		
None	51	32,5
Primary	87	55,4
Secondary	19	12,1
Marital Status		
Single	21	13,4
Married or living with a partner	118	75,2
Widow/Widower	18	11,5
Occupation		
Farmer	123	78,3
Labourer	14	8,9
Salesperson	7	4,5
Housewife	5	3,2
Students	3	1,9
Traditional healer	5	3,2

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Religion

Atheism	24	15,3
Christian	125	79,6
Animist	8	5,1

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215 Table 4 presents the characteristics of healthcare professionals and community health workers. The
216 majority of participants had secondary school. Almost all healthcare professionals had specialised
217 training in primary healthcare and working as maternal and child health nursing, general nursing,
218 technician of preventive medicine and assistant of service, while community health workers had not
219 any specialised training.

220

221 Table 4. Sociodemographic characteristics of healthcare professionals and community health
222 workers

Variables	Healthcare professionals (n=9)	Community health workers (n=4)
Sex		
Male	44,4% (4/9)	50% (2/4)
Female	55,6% (5/9)	50% (2/2)
Education level		
Primary	0 (0/9)	75% (3/4)
Secondary	88,9% (8/9)	25% (1/4)
High Education	11,1% (1/9)	0 (0/4)
Marital Status		
Single	66,7% (6/9)	0 (0/4)
Married/living with a partner	33,3% (3/9)	75% (3/4)
Widow	0 (0/9)	25% (1/4)

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Religion

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Atheism	11,1% (1/9)	25% (1/4)
Christian	88,9% (8/9)	75% (3/4)

223

224

225 **Awareness and acceptability of reactive focal mass drug**
 226 **administration**

227 **Awareness of reactive focal mass drug administration**

228 Most participants of this study were aware about rfMDA programme that was taking place in
 229 the community, and they had participated in previous MDA campaign. Participants received
 230 information about rfMDA from community leaders, community meetings, radio, neighbours
 231 and healthcare professionals after visiting a health facility and testing malaria. Few participants
 232 said that they only knew about rfMDA when their parents were tested malaria at the health
 233 facility or when a fieldworker visited the household to test malaria to all members of the family.

234

235 *“Researcher: Where did you hear or how did you get information about the malaria tablets*
 236 *programme?”*

237 *Participant 2- We only saw people arriving in my house saying that they are coming to give*
 238 *pills. The name of the person who was sick with malaria was found [at the health centre], then*
 239 *they came to ask 'where is the house of person X', then people indicated, 'it is there'.*

240 *Researcher: Didn't you get information from the secretaries of the districts?*

241 *Multiple participants: [Voices overlapping]: No.*

242 *Researcher: Were you surprised?*

243 *Participant 2: Yes. They were asking, “where is the house of person X?”*

244 *Participant 1: In my house they just arrived and came in by surprise.*

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245 *Participant 4: Me too, I was not told by the secretary, I just saw people entering in my house,*
246 *asking "person X's house where is it?". I said it's here" (FGD 15, general population, Motaze).*

247

248 All participants of different groups of the community said that the objective of rfMDA was to
249 treat, cure and eliminate malaria. They viewed rfMDA as important to their families and
250 communities because it helped to diagnose, treat and prevent malaria, which they perceived as
251 a problem in the community. Participants also perceived that since the beginning of MDA and
252 rfMDA programmes, their health status had improved, malaria cases had decreased, and they
253 believed that these programmes cured malaria. Some participants said:

254

255 *"It is very important. I have a child who never stayed two months without going to hospital*
256 *because of malaria, but since they started distributing pills, he no longer suffers from malaria,*
257 *even if he has a fever, I run to the hospital, they give him pills and the fever disappears" (FGD*
258 *15, general population, Motaze).*

259

260 *"I think it is good because before this project [rfMDA] started, when my son and I got sick, I*
261 *knew beforehand that the other one would also get sick quickly, so I had to get money urgently*
262 *and go back to the hospital, but since the distribution of the pills, my children and I have not*
263 *got sick until today" (FGD 04, general population, Mahele).*

264

265 Most participants had an experience about rfMDA program, and they said that home treatment
266 included all members of the family. Only some participants had not experience of rfMDA.
267 Those who had experience viewed rfMDA as important because the diagnosis, treatment and
268 prevention included all members of the family. Some participants expressed their opinion as
269 follows:

270

271 *“It happened to me, I went to hospital when I was very sick with malaria, I arrived and they*
272 *did a malaria test and it showed malaria. They sent the fieldworkers the next day at 8 o'clock*
273 *and when they arrived here at home, they treated me, they treated all people here at home, so*
274 *that they would be prepared, so that the malaria that I had wouldn't contaminate them. I felt*
275 *very good because they helped me with this disease that I had. They came to my house to treat*
276 *me, from then on, I took the pills that I was given until then I feel very well, I still haven't fallen*
277 *ill with malaria”* (SSI 07, member of the community, Mapulanguene).

278

279 *“Even myself I got sick with malaria, they came in my house to test, no one else was diagnosed*
280 *with malaria, but everyone was given pills even without having malaria. They didn't give me*
281 *more pills because I was taking pills”* (FGD 15, general population, Motaze).

282

283 **Acceptability of malaria reactive focal mass administration**

284 All participants of different groups of the community with or without experience, regardless
285 their place of residence, accepted and welcomed the rfMDA programme because it prevented
286 malaria and helped to improve their health status. Moreover, participants perceived that the
287 programme saved people to die from malaria and it eliminated malaria in the community.

288

289 *“The community accepts [rfMDA] because they are seeing that they have no other way to*
290 *prevent the outbreak of malaria or eliminate malaria because malaria kills. It is imperative*
291 *that they accept and comply with the recommendations so that we can eliminate malaria”* (FGD
292 01, general population, Panjane).

293

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294 *“I accept because I see that the fieldworkers follow us from hospital to our homes because of*
295 *this malaria disease. When they do follow up it allows everyone to be diagnosed, including*
296 *those who do not like to go to hospital, and so one can fight and eliminate this disease*
297 *[malaria]” (FGD 09, general population, Motaze).*

298
299 Furthermore, all participants accepted rfMDA because it is based on home treatment, which
300 reduced the cost of transport to the health facility, and helped people who are lazy to go to the
301 health facility when they have malaria symptoms and those who live far from the health facility.

302
303 *“Researcher: Thank you very much. Do you think it is important that we distribute pills in the*
304 *districts?*

305 *Participant: It is very important, it helps us with diseases, even the persons who are lazy to go*
306 *to the hospital when they have malaria symptoms, they end up taking it, because the pills go to*
307 *their house” (SSI 03, community leader, Magude village).*

308
309 *“Maybe I could be sick and I would have to go to hospital, but I might not have money. I could*
310 *borrow money to go to hospital but this programme [rfMDA] helps because the fieldworkers*
311 *come to my house; this is very good because I no longer have to spend money to go to hospital.*
312 *The fieldworkers do complete and better work” (FGD 04, general population, Mahele).*

313
314 *“Here in Mapulanguene, this activity of following up people to their homes when a person is*
315 *sick is very important because there are people who cannot walk and cannot go to the hospital*
316 *because there is no transport. If these people get sick, the solution is to transport them in a*
317 *hand truck to the hospital. But now the fieldworkers are able to go directly to the homes of*

318 *these people to diagnose and treat them. In my opinion, I see that the population is satisfied*
319 *with this type of treatment”* (SSI 10, community leader, Mapulanguene).

320 Some participants said that they accepted rfMDA because they were following norms from the
321 health facility. They also perceived that if they do not accept malaria treatment, they might
322 experience difficulties in the future malaria treatment at the health facility. One of the
323 participants presented his view as follows;

324
325 *“Haaa... we accept because those are the norms and you must comply with. If you don't accept*
326 *to be cured, when you go to hospital (...) while you have malaria, they [healthcare*
327 *professionals] will say that you are not sick with malaria because you didn't accept this*
328 *treatment [rfMDA]. They will say that you are happy when people die in the community, and*
329 *that when you get malaria you will contaminate everyone. So, we accept that when one person*
330 *from the household gets sick, the fieldworkers come to test the rest of the household members*
331 *so that everyone is protected”* (FGD 01, general population, Panjane).

332
333 Almost all participants of different members of the community assumed that everybody would
334 accept to participate in the rfMDA programme because most people were aware of the severity
335 of malaria including its death consequences, and also because they had experience of the
336 benefits of the previous similar campaign against malaria (MDA).

337
338 *“Everybody will adhere to the programme because uhm, malaria kills. And at that time before*
339 *these pills existed others died because of this disease (...). Because what happens is that when*
340 *people get malaria today, tomorrow they wake up well, it attacks them the day after tomorrow,*
341 *the next day they wake up well, when malaria is rising and then it gets to the point that they*
342 *don't even wake up and then go to hospital when it has risen, the person is already losing his*

343 *life by then. But soon after those pills arrived, we escaped, I still haven't heard that anyone has*
344 *died of malaria now, since we have been taking those pills. Now even if they go around the*
345 *houses giving us pills there is no one who will deny; people will accept” (FGD 09, general*
346 *population, Motaze).*

347

348 The experience with previous similar campaigns and the awareness of similar programs were
349 emphasized by one community leader who mentioned that people would participate in the
350 rfMDA because they are familiar to this kind of campaigns and its benefits in preventing
351 malaria as well as avoiding the travelling to the health facility due to malaria.

352

353 *“People have been already informed about program alike this in the past. Since this help of*
354 *distributing malaria pills started [MDA], people are often informed about it. I don't think they*
355 *can refuse to participate because since we started to take these pills people no longer frequently*
356 *go to the hospital due to malaria” (SSI 08, community leader, Magude village).*

357

358 Some participants also said that most people were aware that they had common consensus
359 regarding malaria. This consensus consisted on the idea that malaria was a problem of all
360 members of the community, and therefore, they had to fight against it; and they viewed rfMDA
361 programme as a vehicle which helps to eliminate it.

362

363 *“People will accept the program because we all have the same problem, which is malaria, and*
364 *we have been struggling to fight against this disease” (SSI 05, household head, Motaze).*

365

366 **Acceptability of the procedures used in reactive focal mass drug**
367 **administration**

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368 The procedures of rfMDA consisted of following up all patients tested malaria at the health
369 facility or by community health workers. Fieldworkers followed the patients to their homes,
370 performed malaria and pregnancy test, and treated household members and the surrounding
371 neighbours. This theme analyses community acceptability of these procedures.

372

373

374

375 **From health facility to home treatment**

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376 All participants accepted and welcomed the procedure of following up patients from the health
377 facility to their homes. Participants perceived that this procedure would prevent high transport
378 cost from home to the health facility, it would enable them to know the number of people
379 infected by malaria at the household, and it could contribute to eliminate malaria and prevent
380 death from it.

381

382 *“We received fieldworker from the health facility because we want to know if there is someone*
383 *else here at home with malaria, or is it just that person who we took to the hospital and tested*
384 *malaria” (FGD 10, general population, Magude village).*

385

386 *“We used to die a lot from malaria, because when the person was shaking and could not go to*
387 *hospital, and ended up dying inside the house (...) because many people do not have*
388 *possibilities to take the sick to hospital. Now, treating the disease [malaria] at home, this will*
389 *decrease malaria and avoid deaths from malaria” (FGD 09, general population, Motaze).*

390

391 Moreover, some participants perceived that a visit from the health facility showed an interest
392 of the healthcare professionals about patients that tested positive to malaria. The following
393 excerpt presents participants' views who had experience of rFMDA.

394

395 *“Participant 2: [Fieldworkers] came to my house because I went to the hospital and tested for*
396 *malaria. They came to my house to visit me. They said they were going to visit other people*
397 *who had also been diagnosed with malaria in hospital. So, they visited me up to two to three*
398 *times. I thank them for the visit since they are visiting me, they want to know if I am better or*
399 *not.*

400 *Participant 5: They are good visits, because they are visiting us after we go to the hospital to*
401 *know how we are doing, it is good like this when healthcare professionals visit us” (FGD 05,*
402 *general population, Magude village).*

403

404 Healthcare professionals, in particular, hypothesized that communities would accept receiving
405 fieldworkers from the health facility because the procedure will prevent many patients to go to
406 the health facility, where they often spend long time to be treated.

407

408 *“[The procedure] is positive, because in addition to reducing mortality, it also reduces the*
409 *number of patients in the hospital; because the person goes and arrives and stays a long time,*
410 *he/she has to go to the consultation, from the consultation they are sent to the laboratory, from*
411 *the laboratory they have to go back again for the consultation, and it's not one and the same*
412 *person. So, I think it is one of the reasons why the community accept this procedure” (SSI 09,*
413 *healthcare professional, Magude village health facility).*

414

415 In addition, some healthcare professionals viewed the procedure as an opportunity to visit
416 communities; and a such visiting could represent the commitment of the healthcare
417 professionals with the communities and strengthen the relationship between the healthcare
418 professionals and communities.

419 *“It is a welcome activity because, firstly, when they receive a visit from healthcare
420 professionals, the community feel valued because they know the healthcare professionals go
421 out from the health units to the community to find out about the health situation of that
422 community. For the communities, the visit shows some interest of healthcare professionals to
423 the community. First, we gain that trust with our community as an institution and second, I can
424 say that we manage to detect the possible cases [of malaria] that may be emerging and at some
425 points hidden in the community”* (SSI 04, healthcare professional, Mahele health facility).

426

427 *“(...) the strategy is welcome, it is very welcome, because it will help to eliminate malaria in
428 the community. The strategy also benefits the Ministry of Health because with the elimination
429 of malaria, the ministry will focus on other diseases”* (SSI 05, healthcare professional, Panjane
430 health facility).

431

432 Other healthcare professionals said that following patients from the health facility to their
433 homes would also enable to identify other members who could have malaria symptoms and
434 monitor those who have already tested positive to malaria.

435

436 *“Following participants who test positive for malaria is a good activity, because when we go
437 to the house, after we have tested a member, we can see if that member tested positive for
438 malaria is or is not complying with the medication. But, also at home there might be another*

439 *member with malaria, so when we go there [in the household], we test, we will know how many*
440 *people have malaria”* (SSI 05, healthcare professional, Mapulanguene health facility).

441

442 **Acceptability of malaria test at home**

443 Most participants accepted to be tested malaria at home because they perceived that testing was
444 a way of diagnosing malaria, which most of the time can be hidden in the body. In addition,
445 participants said that the home testing enabled to diagnose other diseases that people might not
446 know.

447 *“I accept to do the test because when someone appears who was bitten by mosquitoes, they go*
448 *to the hospital, then they are able to follow up on that case, they go to the house of the person*
449 *who was detected with malaria, test the people from home, medicate so that they don't get sick.*
450 *They do that because that person who was detected malaria and it can be the case that the*
451 *mosquito contaminates the other people, but there can also be people with malaria in that*
452 *household who have not yet gone to the hospital”* (SSI 05, household head, Motaze).

453

454 *“I am happy with the test because they discover many other diseases. Before they started this*
455 *work, it was difficult to manage diseases, we did not know where to turn, what to do with them,*
456 *but nowadays we know. We are healthy. If I happen to discover an illness that has nothing to*
457 *do with these pills, they advise me to go to the hospital to get the right medication. I leave and*
458 *go to the hospital and there they give me pills that correspond to the disease I have. I see it as*
459 *something good”* (FGD 04, general population, Mahele).

460

461 Some participants also perceived that testing was the only guarantee to know their health status
462 and to comply with the prescribed medication. They said that they wished to be tested to know

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463 if they had malaria or not, and only thereafter they would be sure about the disease they are
464 suffering from and take the prescribed pills.

465
466 *“If the fieldworkers come to my house and they don't test me, I don't feel happy. I want them to*
467 *test me until they tell us that we don't have malaria, only then will we feel happy, because even*
468 *if you go to the hospital and then arrive with the child when he is sick, if they don't test him*
469 *and then take any pills and give to him without testing him, he won't feel at comfortable. If the*
470 *child takes the pills and the next day he doesn't get better, he will say that it is because they*
471 *didn't do any analysis, maybe it's malaria, you don't feel happy”* (FGD 09, general population,
472 Motaze).

473

474 **Acceptability of including neighbours in malaria treatment**

475 Participants were asked if they would accept malaria treatment after their neighbours were
476 tested positive to malaria. All participants said that they would accepted malaria treatment if
477 their neighbours tested positive to malaria, even if none of their household members was tested
478 positive to malaria. This acceptability derived from the fact that participants perceived that
479 malaria was transmissible, and for that reason, including neighbours in malaria treatment would
480 prevent others from getting the disease.

481
482 *“Participant 3: I accept because I will not only prevent the people in my house, but also the*
483 *neighbours (...). This activity of fighting malaria, eliminating malaria from neighbour to*
484 *neighbour is good because we will all be free from malaria.*

485 *Participant 1: In my opinion, I see that it is very good when the fieldworkers come to test me*
486 *for malaria and also test the people at home and the neighbours, because it may happen that*

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487 *the mosquito that bit me comes back to bite the people here at home and the neighbours. The*
488 *mosquito can enter in the house of the immediate neighbours.*

489 *Participant 5: Once I have been infected with malaria it may happen that the neighbours are*
490 *also infected because the mosquito bites here, comes out and bites the neighbours. I see these*
491 *activities are very important to prevent malaria” (FGD 13, general population,*
492 *Mapulanguene).*

493

494

495

496 **Acceptability of pregnancy test at home**

497 All participants of different groups said that they would accept pregnancy test at home. Most
498 participants were aware that a pregnant woman should not take malaria pills. In addition,
499 participants said that most women of reproductive age might not know if they are pregnant or
500 not, and the test would help to disclose the status of the women before administration of the
501 pills.

502

503 *“Participant 3: We accept the pregnancy test because the fieldworker will be following the*
504 *norm "that you cannot give pills if I am pregnant, it may happen that I say I am not pregnant,*
505 *while I am, I want to undo the pregnancy to relieve myself". So, I don't see a problem in this*
506 *issue of taking pregnancy test to know if you are pregnant or not. Also, even if the person has*
507 *not spoken, it is necessary that they first be tested to know if they are pregnant or not, because*
508 *it can happen that they say they are not, while they are, they give pills and the pregnancy*
509 *undoes itself.*

510 *Participant 5: In a household there can be girls, one of them can be pregnant and no one in*
511 *the house knows, she got pregnant and so on, it's not official [refers to a pregnancy contracted*

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512 from a man not known to the family members and who has not gone through some ceremony
513 of making the relationship official] *so, no, the culprit will not be the fieldworker, because they*
514 *also did not know of the existence of the pregnancy.*

515 *Participant 7: It is also not correct that a girl is pregnant and takes the pills. If the girl is*
516 *pregnant and after taking the pills the pregnancy falls apart, it would be the fault of the*
517 *fieldworker” (FGD 15, general population, Motaze).*

518

519 Both women of reproductive age and adolescents accepted to be tested, and they also knew the
520 importance of pregnancy test before the administration of the malaria pills. They said that if a
521 pregnant woman took the malaria pills she could suffer abortion. They perceived the pregnancy
522 test as a way of preventing abortion.

523

524 *“We do pregnancy tests for women because it can happen that they give pills while she is not*
525 *well, if they give pills while she is pregnant, she can have complications or lose that pregnancy*
526 *here at home, the fieldworker who gave the pills will be guilty” (...)* (SSI 05, woman of
527 reproductive age, Motaze).

528

529 *“They do the pregnancy test because of the malaria tablets. If they find me while I am pregnant,*
530 *after being tested, if I take those pills, they can cause an abortion. The test is for the*
531 *fieldworkers to be sure that the person is not pregnant because there are people who don't even*
532 *know if they are pregnant or not”* (SSI 08, adolescent, Magude village).

533

534 In addition, some women of reproductive age and members of the community said that they
535 were *“pleased”* to performance pregnancy test because it enabled them to discovery the
536 pregnancy.

537

538 *“The test is very good because you can be pregnant without knowing. The first time I was tested*
539 *I was breastfeeding my baby and I didn't know that I was already pregnant. When they did the*
540 *test, they found out that I was pregnant, but I didn't even know, they did me a big favour because*
541 *even my husband didn't know; the pregnancy was hidden, the child was sucking dirt (...). If it*
542 *hadn't been for the test, I would only realise that I was not well when the belly was already big,*
543 *so the test was very important”* (SS 02, woman, member of the community, Magude village).

544

545 Moreover, household heads, both women and men, and community leaders mentioned that they
546 accepted pregnancy test to their wives and female adolescent as they acknowledged that they
547 might not know if they were pregnant or not. In addition, they viewed a pregnancy test as
548 “good” because it helped to diagnose several diseases, and it enabled pregnant women to seek
549 health facility early for treatment and follow-up of the pregnancy.

550

551 *“The pregnancy test is important because if the person is tested they [fieldworkers] can find many other*
552 *diseases; if they find diseases, the doctors will treat those diseases that she has. The person is tested*
553 *because it may happen that she is pregnant while she has malaria, the child may get it from inside the*
554 *mother [in pregnancy]. When the woman is tested, various diseases will manifest then, so that both*
555 *mother and child will be treated”* (SSI 10, household head, Motaze).

556

557 *“Participant 1: When they test us and find out that we are not pregnant we are happy because*
558 *we are breastfeeding.*

559 *Participant 3: Testing girls for pregnancy does not pose any problems because they grow up.*

560 *For us mothers, if it is me, finding my daughter in this state [pregnant], for me it is a help*
561 *because I live with her without knowing. It happened to me, I want to be honest, I sent my*

562 *daughter to school without knowing that she was pregnant. The school sent her back home*
563 *because she was pregnant, but if I had known before, I wouldn't have sent her to school.*
564 *Participant 5: I don't see any problem in testing my daughters because if you find out that my*
565 *daughter is pregnant, and tell me I will have information or tell her in secret, she will come to*
566 *know that she is pregnant (...). There is no problem, even if she is not in the home (...)" (FGD*
567 *07, general population, Mapulanguene).*

568
569 *"Normally, when a woman is pregnant she has to go to the hospital to be tested, but there are*
570 *others who know the importance of being tested and there may be something that is not right,*
571 *if you come to test the person you may discover something that the person did not know. The*
572 *fieldworkers test women in the clusters to know if they are pregnant or not. But if they are, they*
573 *rescue the woman quickly or advise her to go to hospital for further care very early" (SSI 11,*
574 *member of the community, man, Panjane).*

575

576 **Acceptability to take malaria pills at home**

577 Most participants accepted to take malaria pills at home even when they were not sick of
578 malaria as they perceived that pills prevented malaria to the members of the family and
579 community members, which in turn prevents people to often go to the health facility because
580 some of them lived far from the health facility. In addition, a community leader stated that
581 since the start of the mass drug administration, he has witnessed a reduction in malaria cases.
582 The same participant also said that the community had learned from previous experience, such
583 as MDA, that malaria pills protect people from diseases.

584

585 *"I accept taking tablets even without malaria. Even if field workers leave my neighbour's house*
586 *after giving pills, come here at home, we all have a duty to accept, because since we started*

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587 *taking pills in 2016 until now we have seen a reduction in malaria. So, we should not refuse,*
588 *we have to accept taking tablets to prevent malaria”* (SSI 09, community leader, Magude
589 village).

590

591 Regarding the easiest group to accept malaria pills, some participants mentioned young and
592 adult women, adult men, elders, community leaders and all people with the disease experience
593 of malaria and were not willing their family members to get it.

594

595 *“Neither our ladies' group nor the gentlemen's group can refuse, because when you start to get*
596 *sick, no one is happy about it, we rejoice when our children and we adults are in good health.*
597 *Therefore, we cannot refuse [to take pills]”* (FGD 04, general population, Mahele).

598

599 *“I think the group of mothers are the ones who understand the most, because they have younger*
600 *children. They quickly understand why they prevent themselves and their child's health. They*
601 *usually follow the healthcare programmes. The elderly also easily accepts to take the pills. In*
602 *general, adults will accept because they comply with one thing and another that is said. When*
603 *you speak, they feel firm in your words and you make sure that you also do it in your house,*
604 *they like it”* (SSI 04, community health worker, Mapulanguene village).

605

606 *“The people who most accept to take pills are those who have information about why malaria*
607 *exists and those who already feel it in their skin because they have had malaria in the past (...)*
608 *They are the people who already know they have malaria and do not want their family to have*
609 *it too (...)”* (SSI 05, healthcare professional, Panjane health facility).

610

611 **Barriers to reactive focal mass drug administration**

612 Questioned on the main barriers to the reactive focal mass drug administration, the included
613 different groups of the community said that there were some barriers regarding the ongoing
614 implementation of rfMDA. They predicted that not everybody would accept to be tested and
615 some community members might insult or mistreat the fieldworkers because each member has
616 its own way of thinking.

617
618 *“It depends, not all of us here can accept the same thing [home testing]. It depends on each
619 one's interpretation, I can accept and my mother can't, but we are living in the same house, it's
620 my mother, I'm the daughter, but I can deny and she can accept, each person has her own way
621 of thinking”* (SSI 08, adolescent, Magude village).

622
623 *“It is possible that the person you are going to meet in some household will insult you; he may
624 say: go back with that job of yours (...). Other people may make jokes and talk a lot of nonsense
625 (...)”* (SSI 05, community leader, Magude village).

626
627 Some participants also said that some household heads might not allow fieldworkers to enter
628 in the house and treat the members of the family, or fieldworkers might be poorly treated, while
629 others pointed out issues related to the absence of some or all members of the household. For
630 the participants, these barriers could hinder the rfMDA programme.

631
632 *“Fieldworkers can be turned away, not allowed to enter in the houses. As community leaders,
633 we have been called by neighbours, informing that the fieldworkers wanted to enter in a
634 household, but they were being threatened (...)”* (SSI 03, community leader, Mahele).

635

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636 *“The only barriers they [fieldworkers] can find are like arriving at a house and not finding*
637 *anyone. After sometimes, this family may get sick while people [fieldworkers] have already*
638 *passed (...). In relation to other things, I don't see barriers if people are found and accept,*
639 *although we are not equal in understanding, because you can arrive in a house and say that*
640 *we are asking to test you and they can refuse, because some have already been commenting*
641 *that the pills we take are very heavy in the body, but if you follow with the recommendations,*
642 *eat before you medicate, there won't be problems. Some people go out and consume alcoholic*
643 *drinks, while they have just taken pills, it doesn't match, the person has to comply with the rules*
644 *to be able to live”* (SSI 17, member of the community, man, Panjane).

645 **Barriers to home testing of malaria**

646 Regarding the barriers to home testing, participants mentioned some barriers, such as the
647 repeated pricks to collect blood sample and difficulties to collect blood sampling among
648 children because some participants perceived that the blood of the child would finish as
649 children have little blood. In addition, it was also mentioned that some household heads might
650 not accept test for themselves and their family members due to lack of awareness about malaria
651 testing.

652
653 *“Difficulties may exist when fieldworkers prick children and the blood doesn't come out, or*
654 *when they prick someone and the blood doesn't come out; when they insist and prick up to*
655 *three times on the same finger the person starts to feel pain. And, when it's a child, if they prick*
656 *several times the blood will finish because the child still doesn't have much blood”* (FGD 07,
657 general population, Mapulanguene).

658
659 *“What might be a hindrance to the activity is if the head of the household does not accept the*
660 *malaria test for himself and his household members because he might not think it is important*

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661 (...). If the householder refuses, it will not be possible to do the malaria test” (SSI 04, member
662 of the community, man, Magude village).

663

664 **Barriers to pregnancy test**

665 Participants presented several barriers regarding pregnancy test, which included, management
666 of positive pregnancy test disclosure specially when the women’s husbands work far from
667 home, existence of difficult groups to preform pregnancy test, perceptions about who should
668 perform a pregnancy test in women, as well as, the fear of family problems.

669

670 Participants agreed that it would be difficult to test and manage pregnancy test results among
671 women whose husbands work and live in South Africa.

672

673 “There will be problems in my house with my sister-in-law because her husband is not in, he
674 went to South Africa. So, if the fieldworkers find out that she is 2 months pregnant while her
675 husband has long travelled to South Africa, we need to have a good talk with her. But if it is
676 my daughter who is pregnant, there is no problem. You can tell me” (FGD 07, general
677 population, Mapulanguene).

678

679 “I think the problem will arise when fieldworkers find that a woman has 2 months pregnant
680 while her husband has been in South Africa for more than 5 months; but this can become a
681 problem if the fieldworkers disclose this information because the husband’s parents will want
682 to know where she got the pregnancy; and that can be a problem. So, to prevent this problem,
683 fieldworkers, first should ask whether the household head is in or not. If the head of household
684 is in South Africa, we will be afraid to test their wives, because if we test, it may cause
685 confusion” (SSI 17, member of the community, Panjane).

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686

687 The male participants, particularly the ones working far from their homes, raised a concern
688 regarding the disclosure of pregnancy test. The concern was that the disclosure of pregnancy
689 in their absence could create worries as the community would be the first to know, and they
690 might not certify if their wives were faithful. Thus, they requested that the disclosure of the
691 pregnancy test should be a secret.

692

693 *“Participant 3: Regarding the difficulties of pregnancy testing for women, we request that your*
694 *fieldworkers who will be distributing pills, have confidentiality because from my wife's side, I*
695 *work and stay a long time on duty, I end up staying 2 months without coming back. I may think*
696 *that my wife has nothing [pregnancy] while she is pregnant. So, if there is a leak that my wife*
697 *is pregnant and I don't know, nor have I seen; excuse me, but we need to be clear, because I*
698 *will no longer know if that pregnancy is mine or not. Your fieldworkers should have*
699 *confidentiality; (...) you didn't come to destroy our homes, you came to help us, so we ask for*
700 *confidentiality when it is proven that women are pregnant.*

701 *Participant 5: I agree with what the colleague said. It would be good if fieldworkers could test*
702 *and say how many months of the pregnancy: one or 2 months; because I can stay in South*
703 *Africa (...) 3 or more months working outside home and, the fieldworkers find out that my wife*
704 *is 2 months pregnant, but I have been outside home for more than 3 months (...). Then when*
705 *they find out that she is pregnant, the fieldworkers cannot talk in the community because they*
706 *have not come to destroy our homes” (FGD 08, general population, Mapulanguene).*

707

708 Regarding the difficult groups to perform pregnancy tests, both adult women and men,
709 community health workers and community leaders mentioned adolescents. They predicted that
710 adolescents may refuse the pregnancy test at home due to fear of their parents, because if they

711 are tested positive, their parents would know that they are pregnant and this can be a family
712 issue as they might be hiding the pregnancy.

713

714 *“The ones who usually deny pregnancy test are the girls. Since the test will be done at home,*
715 *they know that if they test me here where the breast is, she will find out that I am pregnant”*
716 (FGD 09, general population, Mahele).

717

718 *“Girls tend to hesitate to take the pregnancy test. They say they are not pregnant while they*
719 *are hiding”* [pregnancy] (SSI 10, community leader, Mapulanguene).

720 Adolescent, however, said that they were not afraid of pregnancy test. They added that who
721 had to decide about pregnancy test for them were their parents. They perceived that their
722 parents may not allow them to do pregnancy test due to social norms. They explained that if
723 they are found pregnancy they had to inform their mothers, and not their fathers or the mother
724 and the father at the same time.

725

726 *“Mums might not accept their daughters taking the pregnancy test because if me and my*
727 *parents, mummy and daddy are sitting in the same place, no matter how much something*
728 *forbidden happens to me [menstruation or pregnancy] I can't tell my dad. I have to go and tell*
729 *my mummy because I don't know anything yet, I'm underage, they tell me to do this, this and*
730 *this, and I say 'that's fine thank you'. Then mummy might not accept that I do pregnancy test in*
731 *front of my daddy because he will know the results immediately”* (SSI 01, adolescent, Magude
732 village).

733

734 Some participants, particularly women of reproductive age, said that some household heads
735 might not accept their wives to perform a pregnancy test because most men perceived that a

736 pregnancy test must be performed by a woman and not by a man. Participants added that some
737 women might refuse pregnancy test due to fear of violence of their husbands.

738

739 *“The group that might not allow women to do the pregnancy test are men, because they think*
740 *that a man has no right to test pregnancy on a woman, only a woman can test pregnancy on*
741 *another woman”* (SSI 17, member of the community, woman, Panjane).

742

743 *“Women may refuse pregnancy testing for fear of violence of their husbands; this can happen.*
744 *Some men may be violent to their wives if they accept the test without their consent”* (FGD 10,
745 general population, Magude village).

746

747 However, other participants, particularly men, said that women of reproductive age do not like
748 to do pregnancy test at home because they said that if they wanted to know about their
749 reproductive health, they would go to the hospital.

750

751 *“There are many women [of sexually reproductive age] who do not like to take a pregnancy*
752 *test. When they are talking on the street, they say that 'testing people is not good, because if I*
753 *want to have a baby, I know the way to the hospital, I know how to do it, testing people is not*
754 *good'. (...). It has been more the women who deny the pregnancy test because they say that they*
755 *know where to get help, which is in the hospital”* (SSI 04, household head, Motaze).

756

757 Other participants said that some women might deny pregnancy test due to fear of pregnancy
758 disclosure within the family. Additionally, they said that some women might also make use of
759 pills distributed to prevent malaria to do the abortion of unwanted pregnancy, as they are
760 already aware that malaria pills may cause abortion.

761
762 *“Other women may refuse to do the pregnancy test if they know they are pregnant and they did*
763 *not want to [unwanted pregnancy], and they may want to take the pills without testing to take*
764 *advantage of the pregnancy [have an abortion] ... because in the other malaria campaign*
765 *[MDA] it was said that if you take pills when you are pregnant, the pregnancy will come out*
766 *[you can have an abortion]. But, other women can refuse to be tested because it can be found*
767 *out that they are pregnant Our daughters may not know that they are pregnant, but after*
768 *the test they will know and we will also find out and ask them about the pregnancy” (FGD 09,*
769 *general population, Motaze).*

770

771 **Barriers to administration of malaria pills at home**

772 All participants pointed out some barriers that can hinder the uptake of malaria pills. These
773 barriers included people’s perception and habits about when to take pills, side effects, lack of
774 compliance of the dosage, lack of decision-making of the household head, conflict of
775 prescription between the recommended malaria pills and local traditional medicines, lack of
776 adequate information, and existence of groups who can resist to take pills.

777

778 Regarding people’s perceptions about when to take pills, some healthcare professionals
779 mentioned that most members of the community perceived pills as substances to be taken when
780 they are sick, and it would be challenging to request people to take malaria pills while they
781 were not feeling sick.

782

783 *“I think that there will be some barriers because our communities, the characteristic of our*
784 *communities, is to take some pills when they are sick. So, when you arrive in the community*
785 *and tell people to take pills while they do not feel sick, then this ends up creating a situation*

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786 *that is not good for the community. So, this is the main barrier that even we as an institution,*
787 *we have been facing because they only take pills when they are sick”* (SSI 04, healthcare
788 professional, Mahele health facility).

789

790 In fact, to substantiate healthcare professionals’ predictions, some participants, particularly
791 household heads and adolescents, confirmed that they would not take malaria pills unless the
792 test shows that they have malaria, even if their neighbours or other members of the family were
793 tested positive to malaria.

794

795 *“(…) I cannot accept taking pills just because they tested and found that my neighbour had*
796 *malaria while my test was negative, because they tested to know if I have malaria, and they*
797 *told me that I don't have malaria; and then if they give me pills to take; that I cannot accept”*
798 (SS 01, household head, Panjane).

799

800 *“I can't accept to take pills because I don't have malaria, even if my neighbour was detected*
801 *malaria in the hospital”* (SSI 01, adolescent, Panjane).

802

803 Another barrier was regarding participants’ previous experience about malaria pill’s side
804 effects. Some participants said that some people might not accept taking malaria pills because
805 when they took in malaria previous campaign (MDA), they experienced dizziness.

806

807 *“It will be difficulties because I believe that not all [people] will want to take the pills, they will*
808 *have doubts, because of the reactions of the pills. From what I have experienced, I believe that*
809 *at the time of the campaign people were not explained why they had to take pills, what might*

810 *happen after taking the pills. This information would have prevented people to get panic*” (SSI
811 06, healthcare professionals, Magude health facility).

812
813 *“People may not take the pills because of dizziness, because the pills cause dizziness; they*
814 *make you dizzy. It happened with my grandson, he got dizzy, he was shaking after taking*
815 *malaria pills in the second day. We went to the hospital and they prescribed other pills that we*
816 *have to buy from the pharmacy outside, but the pharmacy was closed because it was Sunday,*
817 *and it was difficult to manage the situation*” (FGD 11, general population, Magude village).

818
819 Lack of compliance with malaria pills dosage was also reported as a barrier. The discourse of
820 some participants pointed out that some people only took the pills in the first day, in the
821 presence of the fieldworkers. But, they did not adequately take the pills in the following 2 days
822 as they had been recommended.

823
824 *“I think that there are still difficulties in taking the pills because some people, when the field*
825 *worker leave those pills that they have to take in the absence of the staff, some don't take it. I*
826 *can believe that some don't take it, this is because the same person... the same family member,*
827 *whose other was tested positive, when they leave it for him to take it, he doesn't take it, and*
828 *three days later he shows up at the health facility with malaria, and sometimes, when we ask if*
829 *he took the medicine that fieldworkers left, and he says yes, while he simply didn't take it*” (SSI
830 2- healthcare professional, Magude village health facility).

831
832 *“We, the Mozambican people, are lost because when we take the pills, we put them under the*
833 *pillow, you think that you are already better that day, because you took the first dose. Most*
834 *people do not take pills until finishing the dosage. They interrupt it and drink beer, but they*

835 *won't get better, they will always be in hospital because they have transgressed the norms,*
836 *crossed the line, and they will always get sick”* (FGD 01, general population, Panjane).

837

838 Healthcare professionals and community health workers mentioned the absence of the
839 household head or lack of his consent as a barrier to all family members to take the pills.

840

841 *“One of the barriers would be if field workers arrive in a household where the head of*
842 *household is not there, practically that person will not be attended to. Fieldworkers will not be*
843 *received, they will have to wait for the head of household to authorise, then they will not be*
844 *able to work”* (SSI 05, healthcare professional, Panjane health facility).

845

846 According to the participants, the intake of traditional medicines might be another barrier to
847 home intake of the drug. Community leaders and healthcare professionals mentioned that there
848 might be a conflict between the recommended malaria pills and local traditional healers'
849 practices. They explained that some traditional healers may refuse malaria pills alleging that
850 they treat it themselves. Other said that children or other people might not be allowed to take
851 malaria pills at the same time that are taking traditional medicine prescribed by the traditional
852 healers.

853

854 *“Another barrier would be to get to the household head, let's suppose that the head of that*
855 *household is a healer, he thinks he can treat malaria, or he can only treat the person who has*
856 *malaria, not those people who don't have it, he knows how to do things. He will say: no, here*
857 *at home these are the rules, I treat it, no one get sick of malaria (...). It would be difficult to*
858 *convince him because he thinks that he can treat himself, he is already a doctor, he calls himself*
859 *a house doctor, it would be difficult to medicate this healer, because he thinks that he is also a*

860 professional. And he may not let the fieldworkers do their job because of some myths. You can
861 explain to him that there is no traditional treatment for malaria, but he still has these taboos”
862 (SSI 05, healthcare professional, Panjane health facility).

863
864 “For example, here in Mapulanguene [name of administrative Post], there are traditional
865 healers who prescribe traditional medicine to children and other people. You may come to a
866 family, and they can say: “today I gave traditional medicine to my son, and he/she cannot take
867 malaria pills”, you may find that” (SSI 10, community leader, Mapulanguene).

868
869 The future possibility of getting malaria even after taking the pills was mentioned as another
870 barrier. Some healthcare professionals said that some people might ask “for how long they will
871 get malaria after taking pills?”, and if they are aware that even taking the pills, after sometimes
872 they will still get malaria, they might not adhere to the pills.

873
874 “One of the barriers would be, for how long will I not have malaria, for how many years? That
875 question anybody can ask, as long as they don't have exact information about the drug, they
876 can ask this question for how long, if it's for a short time, he or she may reject saying: ‘there's...
877 I don't have malaria, what's the point if after so long I'll have malaria” (SSI 05, healthcare
878 professional, Panjane health facility).

879
880 Indeed, some participants with previous experience of malaria pills treatment questioned the
881 usefulness of the malaria pills because they still got sick even after taking the pills.

882
883 “We heard that malaria will end after taking the pills, we took the pills but we still get sick with
884 malaria” (FGD 08, general population, Mapulanguene).

885

886 Almost all participants said that the main barrier would be the lack of adequate information
887 about the importance of pills for malaria prevention. They also added that another barrier would
888 be lack of information about how and when to take the malaria pills. Participants reported that
889 not all fieldworkers offered adequate information before requesting people to take the pills.

890

891 *“Inform your fieldworkers who are distributing pills, in the beginning there were problems*
892 *because people said that: ‘I cannot take pills because we had not eaten’, and we are not yet*
893 *well clear in our heads. We asked that when the campaign starts, also bring food because we*
894 *thought we could take pills after the meal; while it is not. We went to find out that it was a*
895 *mistake of some fieldworkers. It is not everything that they tell us, that they explain clearly in*
896 *the households. Some fieldworkers misrepresent the information, it is important that they come*
897 *while they have clear knowledge of what they are going to do. They say that these pills can*
898 *only be taken after the meal”* (FGD 08, general population, Mapulanguene).

899

900 In fact, some healthcare professionals experienced the impact of this misinformation in some
901 communities. They reported that some people refused to take pills unless it was also
902 accompanied with some food distribution.

903

904 *“The big barrier, which is not even my opinion, but it is what I have experienced in the*
905 *community, is that once I went to talk to my neighbour, I tried to convince her to take the pills,*
906 *but she did not accept for the following reason, she says: “first they should give us food, they*
907 *always only come to give us pills after pills, first you have to eat to be able to take pills. Why*
908 *don't they give us food? They are only handing out pills”, this is one of the barriers that is*
909 *common in the community”* (SSI 07, healthcare professional, Magude village health facility).

910

911 Some community health workers and general population who participated in this study reported
912 that it would be difficult to convince members of the community to take pills because the
913 fieldworkers were outsiders, and local community health workers or members of the local
914 communities were not involved in the campaign.

915

916 *“In the previous campaign, it would have been possible to eliminating malaria, but it was not*
917 *possible because outsiders were recruited and worked in the campaign. We had problems*
918 *because they [fieldworkers] did not work with us [local community health workers]. So, in*
919 *some households, they had difficulties because people did not accept to take pills as they did*
920 *not trust those who were distributing pills”* (SSI 04, community health workers,
921 Mapulanguene).

922

923 With regards to the groups that are resistant to take malaria pills, participants presented mixed
924 perceptions. Most of the participants said that young people, particularly boys and drunken
925 people were mostly the groups that would refuse to take pills.

926

927 *“The group that refuses to take pills is the group of boys, because I have a boy who refuses to*
928 *take it, he does not accept it, but we take it [adult men and women] (...). We don't succeed to*
929 *convince young people to take pills. They will not take it. You can meet them here at the gate*
930 *and say that you need person 'X', he will tell you that he has just left, while it's him. The*
931 *fieldworker will leave, but if I tell the fieldworker that 'that's him' is the person they are looking*
932 *for; he can turn and kill me here at home”* (FGD 10, general population, Magude village).

933

934 “We drink beer, when you arrive, I will have already drunk beer, they [fieldworkers] give us
935 medicine and tell us to take it, while we are already drunk. Even those pills that others say are
936 bad, in reality, they don't make you sick, when the fieldworkers arrive they find me drunk and
937 they tell me to take [pills] there in the presence of them [fieldworkers], so, the person gets
938 drunk twice” (FGD 06, general population, Magude village).

939

940 Adolescents and healthcare professionals, however, perceived that adult people working in
941 South Africa and elderly were groups that would mostly refuse to take pills.

942

943 “The majority, the new ones, (...) I'm talking about the young people, those don't have
944 problems. I believe that a big part of the people who inhibit family members from taking pills,
945 are adult people who work in South Africa, because they don't know where we are coming from
946 and where we are going to. He didn't get the information in the first hand, or hear it from
947 someone; he only heard rumours, and he ends up inhibiting his relatives from taking the pills”
948 (SSI 08, healthcare professional, Magude village health facility).

949

950 “The elderly and fathers [adult people] only take pills when they want, others only take them
951 the first day, the next day they don't take them, and they say: “as soon as they [field workers]
952 are gone, they won't see that we are not taking it” and, they leave the pills” (SSI 10, adolescent,
953 Panjane).

954

955 **Perceptions about ways to uptake adherence to reactive focal mass drug**
956 **administration**

957 All participants of different groups of the community perceived that several strategies could be
958 used to uptake community participation in rfMDA, including the need for more awareness

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959 about rfMDA, planning of the activities, access to accurate information about antimalarial pills,
960 supervision during the administrations of the pills and improvement of attitudes of
961 fieldworkers.

962

963 The access to accurate information was considered crucial to uptake adherence to rfMDA.
964 Thus, participants suggested more community engagement that includes door to door
965 sensitization, use of entertainment activities, such as theatre during sensitization, as well as the
966 inclusion of community leaders during the campaign and rfMDA implementation.

967

968 *“Community leaders should be informed to gather the population and inform them about the*
969 *malaria campaign. They should be informed about the month and day when the fieldworkers*
970 *will come to the community. People should be informed about the importance of the pills and*
971 *appeal to the population not to run away during the fieldworkers' visit. When the campaign*
972 *starts the community leaders should be informed and they should accompany the fieldworkers*
973 *because they are the ones who know the communities”* (FGD 09, general population, Motaze).

974

975 *“Sensitization of the population should be done in a timely manner, about one month before*
976 *the campaign starts. Mobilization should be done house to house or hold meetings for these*
977 *mobilizations. Talk about things that people will understand and prevent misrepresented*
978 *information. Mobilise the locality chiefs and secretaries of the neighbourhoods so that they*
979 *mobilise the populations because they are the ones with power”* (SSI 06, healthcare
980 professional, Magude health facility).

981

982 Most participants also said that they were often busy with their everyday activities, and they
983 might not be at home during the visit of the fieldworkers. So, they proposed that rfMDA

984 activities should be well planned, people and community members should be informed
985 beforehand about the day and time the fieldworkers will visit, and also, they should comply
986 with the planned day. Participants perceived that this would prevent absence of the members
987 of the household.

988

989 Almost all participants reported that it was important to give accurate information about
990 antimalarial pills in advance. They explained that people should be informed about the
991 importance of the pills, explain its adverse effect and evaluate if some people are sick of some
992 disease contraindicated to antimalarial pills.

993

994 *“People should be told why it is important to take pills, what the pills are for, and whether the*
995 *person is sick. This is because you may meet the people while they are not sick and they may*
996 *wonder why they have to take pills if they are not sick. Then, you should explain what those*
997 *pills are for. I think that after explanation people will accept to take the pills”* (SSI 08,
998 adolescent, Magude village).

999

1000 *“Other fieldworkers just come and give us pills, they don't explain what they are for. People*
1001 *do not know what prevention is, you have to explain well, say that they should take tablets to*
1002 *prevent malaria”* (SSI 07, member of the community, man, Mapulanguene).

1003

1004 *“First, it would be better to explain what these pills are, their adverse effects: this can happen*
1005 *and that, you can do this at home; advise people that if they feel ill they can go to the hospital,*
1006 *etc. I think the big problem is the adverse reactions of the pills. You should explain to the*
1007 *patient that it may happen, this, this, this..., that they shouldn't be alarmed, it's natural, it's the*

1008 *effect of the medication, after a while it may pass, if it doesn't, they can go to hospital*" (SSI
1009 06, healthcare professional, Magude village).

1010

1011 Some participants explained that some fieldworkers recommend drunken people to take
1012 antimalarial pills, while others do not give pills to drunk people at all. These participants
1013 perceived that people should not take pills after drinking alcohol, and they suggested that pills
1014 should be left at the household, and people would take in the following day.

1015

1016 *"Usually, the fieldworkers arrive late and find people already drunk. But, some fieldworkers*
1017 *say even if the person is drunk, they recommend him to take the pills. So, we are used to it, that*
1018 *if you have just drunk, you should not take pills. We deny taking the pills after drinking*" (FGD
1019 05, general population, Magude village).

1020

1021 *"If the person is drunk, the fieldworkers should leave the pills, and leave recommendations*
1022 *with a person who is not drunk. He will take it the next day when the drunkenness is finished*"
1023 (FGD 06, general population, Magude village).

1024

1025 Some participants suspected that not all people comply with the recommended dosage of the
1026 antimalarial pills. To overcome this problem, healthcare professionals proposed supervision
1027 during the administrations of the pills. They explained that the fieldworkers should visit the
1028 households and monitor the compliance of malaria pills intake during the recommended days.

1029

1030 *"Fieldworkers could stay in the community for some period of time to monitor pills-taking. Tell*
1031 *the patient that I will come back tomorrow to the house to see if he has taken the pills, to find*
1032 *out about adverse reactions, if there was anything, or if he happened to feel unwell (...). So,*

1033 *the fieldworkers would distribute and monitor the pills at the same time. What sometimes*
1034 *betrays us is: I leave the pills and say: 'today you take it, tomorrow you take it'. The person*
1035 *takes it today, then he understands that he is not sick, and the person stops taking the pills"*
1036 (SSI 01, healthcare professional, Mahele health facility).

1037
1038 *"To comply with the dosage, I think people should take the pills in the presence of the*
1039 *fieldworkers, and not let the patient decide to take it in the following days alone. He can have*
1040 *a party and stop taking the pills, and he can take them when he wants. The lack of monitoring*
1041 *can cut the effect of the medicine itself"* (SSI 08, healthcare professional, Magude village health
1042 facility).

1043
1044 A considerable number of participants appealed to the improvement of fieldworkers' attitudes
1045 as they perceived that fieldworkers do not often comply with the local cultural norms such as
1046 greeting the members of the households, explaining the reason why they are visiting that
1047 household and explaining why and how to take antimalarial pills. Participants expected humble
1048 and respectful fieldworkers, and they suggested that fieldworkers should not be young people.

1049
1050 *"Participant 1: It is necessary that when a fieldworker arrives at a house he should greet, after*
1051 *he has greeted we will give him chair to sit, and then he communicates to us about the reason*
1052 *why he came to visit us, he explains to us how the pills are taken. But there are some*
1053 *fieldworkers who are very young who create difficulties...they don't explain, they don't know*
1054 *how to answer adult people.*

1055 *Participant 3: Even if they are not young fieldworkers, some when they arrive they say: "you*
1056 *have to take pills, you also have to take them here", even when someone has asthma, they say:*
1057 *"you have to take, take pills. So, that's what we don't want.*

1058 *Participant 5: (...) They [fieldworkers] should explain their mission well and in a good way so*
1059 *that they can give us pills and we take them, in as much as we are satisfied also; they should*
1060 *not prick the heart (not offend) the person, because if they prick the heart the person already*
1061 *takes the pills unsatisfied” (FGD 05, general population, Magude village).*

1062
1063 *“Participant 1: Fieldworkers should be people with respect, they should not come with pride,*
1064 *others come with their own problems and put out on me, we will not agree to each other, and*
1065 *some may be sent away.*

1066 *Participant 4: A fieldworker has to be someone who works with an open heart and calm, so*
1067 *that we can also receive him well” (FGD 11, general population, Magude village).*

1068
1069 Some participants also claimed that fieldworkers were outsiders of the community. They
1070 proposed training of some local fieldworkers who could understand local language, practices
1071 and culture, and who would build a strong relationship with the local communities.

1072
1073 *“Among the fieldworkers, they should include ladies or girls from our area. These people know*
1074 *the local life, it would be simple for them to greet “how are you”, have you ever felt something*
1075 *“X”; they would be able to explain the local people in a good manner” (DGF 07, general*
1076 *population, Mapulanguene).*

1077
1078 *“The rfmDA programme should involve local communities; involve someone from the*
1079 *community, it would be better to train someone local that the communities know, it would*
1080 *create confidence in the community, it could be a huge help. The knowledge of that person*
1081 *could help them to join the campaign. Most of the time, it is not because the person does not*
1082 *want to take pills, but the reason is that the fieldworkers distribute the pills and then disappear,*

1083 *they have no connection with the local communities. Some people resist taking pills because of*
1084 *lack of trust to the fieldworkers; because they don't know those people [fieldworkers]. The*
1085 *population may think maybe the fieldworkers want to kill them; if someone dies who will they*
1086 *turn to? For example, if I am a local fieldworker, I arrive at my neighbour's house, she may*
1087 *even resist a bit to take pills, I try to convince her, (...) she ends up having a different idea, and*
1088 *accept. She will think that my neighbour can't give me this to kill me, if she kills me I'll go to*
1089 *her house (...). So, if we involve the community a little more, if local people are also into the*
1090 *programme, I think it will be better, we will have a greater adherence, and the programme*
1091 *goals can be achieved"* (SSI 05, healthcare professional, Panjane).

1092

1093 **Discussion**

1094 This qualitative study analysed acceptability and perceived barriers to reactive focal mass drug
1095 administration (rfMDA) among community members exposed to community engagement
1096 campaigns and malaria elimination interventions in rural Magude district. The study found that
1097 all group members of the community included in the sample accepted rfMDA regardless the
1098 place of residence. This acceptability was associated to the awareness about rfMDA as a result
1099 of community engagement campaigns. The perceptions that rfMDA, like the previous MDA,
1100 would prevent malaria, improve people's health status, and the fact that the procedures used
1101 would reduce the cost of transport to the health facility also influenced rfMDA acceptability.
1102 Moreover, participants perceived malaria as a local health concern, and they believed that
1103 rfMDA could help to eliminate it. This result is consistent with previous studies in the same
1104 study setting [7,9]. In particular, these previous studies found that high acceptability of MDA
1105 was influenced by the perception of malaria as a main health problem [9] and community
1106 engagement campaign [7]. Moreover, others studies undertaken in Tanzania [17], Eswatini

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1107 [18] and Cambodia [19] showed that perceived risk for malaria influenced acceptability of
1108 malaria treatment.

1109

1110 The results of this study also reveal that the procedures used in rfMDA were accepted despite
1111 mixed perceptions about the process of management of pregnancy test outcomes and
1112 administration of antimalarial pills to all members of the community. The acceptability of the
1113 rfMDA procedures derived from the awareness of the communities that those were
1114 recommended procedures to access antimalarial pills; perceptions of the procedures as norms
1115 of the health facility, the willingness to know one health status, and recognition that malaria
1116 could be hidden in the body and transmissible to other members of the community. This result
1117 highlights high awareness of malaria transmission and desire to its elimination. Like other
1118 studies in the Gambia [20] reported, the acceptance of antimalarial pills without malaria
1119 symptoms, may reveal a strong sense of responsibility of the participants of this study toward
1120 protecting themselves, their family members and their neighbours.

1121

1122 Despite community acceptability and high awareness of the procedures used in rfMDA, some
1123 procedures such as malaria testing in children and pregnancy testing were not often welcome,
1124 and they could hinder the uptake of rfMDA campaign. The results of this study showed that
1125 participants were reluctant to perform malaria test among children as they perceived it could
1126 harm children's health by reducing the amount of blood in their body. In addition, participants
1127 were concerned about pregnancy test decision-making and pregnancy testing result disclosure
1128 because it could contribute to disagreement among couples, especially when a wife does a test
1129 without her husband consultation, or if other members of the community access the information
1130 about positive pregnancy test before the husband. Moreover, participants had experience of
1131 previous antimalarial pills, and they were concerned about drug adverse reactions, and others

1132 were reluctant to take drugs without malaria symptoms. These barriers have also been
1133 documented in previous studies [18, 21-24]. Furthermore, like previous studies [25] have
1134 reported, lack of access to accurate information, spread of misinformation about malaria
1135 intervention, being unable to drink alcohol while taking DHAp [7], lack of trust of
1136 fieldworkers, and the demand of food as precondition to take DHAp are potentials barriers to
1137 rfMDA.

1138 The barriers identified in this study reflect the need of more community engagement in malaria
1139 campaign, which include the community appropriation of the malaria elimination process,
1140 involvement of community leaders in the whole process, and training of local community
1141 health workers and other local eligible people to serve as fieldworkers. This strategy could
1142 contribute to community self-appropriation of the malaria elimination campaign, and it would
1143 build a strong relationship between fieldworkers and the community. As the participants
1144 suggested, local fieldworkers are more appropriate to work with communities than outsiders as
1145 they are more prone to follow and respect the local cultural norms, and this could help to build
1146 a strong relationship with the communities.

1147
1148 Community engagement is crucial, and it has been recognised as central to malaria campaign
1149 uptake [26, 27]. Several strategies could be used to strengthen rfMDA, including house-to-
1150 house visits to inform the population about the planned campaign, and provide non-monetary
1151 incentives, such as bed nets, food or school material to children or other things that can
1152 incentivise people to participate in the malaria campaign. Incentivising communities has been
1153 found as a valid community engagement strategy in a similar campaign in Cambodia [27],
1154 where it contributed to the increasing participation of the population in malaria campaign.

1155

1156 **Limitations**

1157 This study is limited to the study setting and the selected participants, and the results could not
1158 be generalized to other settings. Given to the nature of the qualitative methodology that guided
1159 this study, the study sampling was not representative of the study population, and it was subject
1160 to sample-bias because only some participants, who were considered as representing specific
1161 groups of the community, were selected according to the study objectives. This sample strategy
1162 led to exclusion of other community members who could have different views about the study
1163 object.

1164

1165 **Conclusion**

1166 The community of Magude district found rfMDA and its procedures acceptable to malaria
1167 intervention. This acceptability was associated to rfMDA awareness deriving from community
1168 engagement, previous experience of malaria similar campaigns, such as MDA, and willingness
1169 of the community to eliminate malaria. However, some barriers, such as lack of decision-
1170 making on pregnancy test among women, fear of pregnancy test results, lack of accurate
1171 information about rfMDA, fear of DHAp adverse reactions, and reluctance to take drugs
1172 without malaria symptoms might affect rfMDA campaign. Thus, there is a need to continue
1173 with community engagement and built community self-appropriation of malaria programme.
1174 This could include involvement of local community leaders, before and during rfMDA, and
1175 local community health workers and other local people who can work as fieldworkers during
1176 rfMDA campaign. Including community's members in rfMDA implementation could optimize
1177 rfMDA uptake, and therefore contributing to malaria elimination.

1178

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1179 **Supporting information**

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1180 **S1A Appendix. Semi-structured interview (SSI) guide for household heads, women of**
1181 **reproductive age, adolescents, members of the general community and community**
1182 **leaders (Portuguese version)**

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1183 **S1B Appendix. Semi-structured interview (SSI) guide for household heads, women of**
1184 **reproductive age, adolescents, members of the general community and community**
1185 **leaders (English Version)**

1186 **S2A Appendix. Semi-structured interview (SSI) guide for healthcare professionals and**
1187 **community health workers (Portuguese version)**

1188 **S2B Appendix. Semi-structured interview (SSI) guide for healthcare professionals and**
1189 **community health workers (English Version)**

1190 **S3A Appendix. Focus groups discussion (FGD) guide for general population: men and**
1191 **women (Portuguese version)**

1192 **S3B Appendix. Focus groups discussion (FGD) guide for general population: men and**
1193 **women (English version)***S1 Appendix. Semi-structured interview (SSI) guide for household*
1194 *heads, women of reproductive age, adolescents, members of the general community and*
1195 *community leaders.*

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1197 **S4 Table. Consolidated criteria for reporting qualitative studies (COREQ): 32-item**
1198 **checklist**

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1199 ~~S2 Appendix. Semi-structured interview (SSI) guide for healthcare professionals and~~
1200 ~~community health workers.~~

1201 ~~S3 Appendix. Focus groups discussion (FGD) guide for general population: men and women.~~

1202 **Acknowledgement**

1203 To all study participants in Magude district, we are deeply thankful for accepting to participate
1204 in this study and sharing their experiences and views with us. We also address our thanks to
1205 the data field team (field supervisors, data collectors and transcribers).

1206

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1226 acceptability to antimalarial mass drug administration in Magude district, southern

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Subject: Submission of the revised manuscript [PONE-D-22-12696]

Dear academic editor and reviewers,

Thank you for reviewing the manuscript “Acceptability and perceived barriers to reactive focal mass drug administration in the context of a malaria elimination program in Magude district, Southern Mozambique: A qualitative study”. The authors of this manuscript have read the current Instructions for Authors, and agreed to accept the recommended format. The new manuscript version reflects the recommended format. All authors have also read and agreed upon the submitted version of this manuscript. We believe that the new manuscript will now be suitable for publication format in the PLOS ONE journal.

To academic editor:

1. Please ensure that your manuscript meets PLOS ONE's style requirements, including those for file naming. The PLOS ONE style templates can be found at https://journals.plos.org/plosone/s/file?id=wjVg/PLOSONe_formatting_sample_main_body.pdf and https://journals.plos.org/plosone/s/file?id=ba62/PLOSONe_formatting_sample_title_authors_affiliations.pdf

Answer: We followed the recommended format and we used the PLOS ONE templates to revised the manuscript. The new manuscript reflect the recommended format.

2. You indicated that you had ethical approval for your study. In your Methods section, please ensure you have also stated whether you obtained consent from parents or guardians of the minors included in the study or whether the research ethics committee or IRB specifically waived the need for their consent.

Answer: The research protocol was approved by local and national IRB, namely CISM's institutional ethics committee (CIBS-CISM) and the Mozambican Ministry of Health National Bioethics Committee, and a consent was obtained from parents and guardians of the minor included in the study. In addition, an assent was obtained from the young adolescents that participated in the study. This information was now added in Methods section, particularly in ethical consideration section of the new manuscript version. In addition, Table 1 was reformulated for better reading of the presented data.

3. Data availability

We agree and we support the policy of data availability, and we recognize the advantages of data availability. We have read PLOS ONE policy and we think that is very important to share the data publicly. However, the qualitative data used to develop this manuscript involve human discourses, and therefore, there is ethical and legal restrictions to sharing the data publicly. The ethical and legal restriction derive from the fact that the protocol and the informed consent and assent approved by the two ethical review boards referred that the data would only be available to the study team, and the protocol established that all information would be confidential. Thus, no participant of the study was informed that the data would be made publicly. Despite this restriction, the data of this study may be available to all researchers upon request to IRBs. In this regard, we would like to update our statement of data availability to as follows:

Data Availability: The data of this study were collected under individual-level informed consent and assent after a research protocol was reviewed and approved by CISM's institutional ethics committee (CIBS-CISM) and the Mozambican Ministry of Health National Bioethics Committee. The informed consent signed by the participants stated that: "data will only be available to the study team", and the protocol established that all information will be confidential, and no data from the data collection forms, nor from audio files will be accessible to anyone outside of CISM. Given this statement approved by the two IRBs, data from this study is available upon request to these institutional review boards: CISM's institutional ethics committee (sozinho.acacio@manhica.net) or the Mozambican Ministry of Health National Bioethics Committee (jflschwlbach@gmail.com) for researchers who meet the criteria for access to confidential data.

4. We note that you have indicated that data from this study are available upon request. PLOS only allows data to be available upon request if there are legal or ethical restrictions on sharing data publicly. For more information on unacceptable data access restrictions, please see <http://journals.plos.org/plosone/s/data-availability#loc-unacceptable-data-access-restrictions>.

Answer: The answer for this question was already provided in question 3.

5. "PLOS requires an ORCID iD for the corresponding author in Editorial Manager on papers submitted after December 6th, 2016. Please ensure that you have an ORCID iD and that it is validated in Editorial Manager.

Answer: The correspondent author already has an ORCID iD, which is **0000-0002-6871-1218**. I update this ORCID iD in Editorial Manager page, in Update my information, as recommended.

6. Please include captions for your Supporting Information files at the end of your manuscript, and update any in-text citations to match accordingly. Please see our Supporting Information guidelines for more information: <http://journals.plos.org/plosone/s/supporting-information>.

Answer: The captions were included for the supporting information as recommended. The supported information include the interview guides used for data collection (in both Portuguese and English) and Table COREQ. It does not include tables or data mentioned in the manuscript.