

Challenges of improved therapeutic feeding program on management of severe acute malnutrition in Yemen focusing on monitoring and evaluation

The Final Technical Report

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The Summary

Background: The Yemen nutrition program YNP on management of severe acute malnutrition is composed of two arms; Outpatient Therapeutic feeding Program (OTP) and Inpatient Therapeutic feeding centre (TFC). The inpatient TFC program is a hospital level program and has been known to provide better health care for severely malnourished children while, the OTP is a community level program. Monitoring of the nutritional therapeutic program for management of Severe Acute Malnutrition (SAM) in Yemen are limited to the outcome indicators. A lot of information about monitoring and evaluation of the process of implementation of the program are not known especially in areas of case finding/reporting and feedback

Objectives: To understand case detection, reporting and feedback processes of SAM in OTP clinics among GP/health care providers and managers Yemen 2015 and to identify factors impeding good monitoring and evaluation and explore option for improving the monitoring and evaluation process of case detection, reporting and feedback.

Methods: The study include three parts: quantitative part (data collected by questionnaire), qualitative part (data collected by semi-structured interview) and reports review (data collected by Checklist). This report present the three parts of the study in Hadramout, Lahj and Aden governorates in Yemen.

Findings: Finding from quantitative data analysis focus on data obtained through questionnaires that returned from the three governorates (n=213). About 58% are females. The mean age of participants are 34.3 years (SD=7.6 years) About half of participants have previous training regarding SAM management guideline (51%) and 66% of them answer correctly about management of SAM children. About 51% of participants have SAM management guideline but only 43% of participants practice SAM management according to the guideline; this reflect on the ability of the system to detect and manage SAM children: about 49% of participants did not detect any SAM child during two weeks preceding the data collection and 69% did not treat any case of SAM and 59% of participants did not refer any SAM case to the TFC. Regarding reporting; the gap identified is the huge data and difficulty in understanding the reporting forms while feedback is mainly verbal by telephone and be not documented. in qualitative part of the study when in-depth data were recorded, more details about readiness of health system, cadre capacity, program effectiveness, care-taker perspectives and SAM child problems were addressed. in addition to what are concluded in the quantitative part of the study; participants addressed another issues like: Shortage of cadres, Undergraduates are not exposed to SAM management guideline during their pre-service training. regarding health system readiness: Poor OTP Readiness, poor coordination within the facility and improper

administrative readiness. the sick child may refuse the therapeutic food due its taste or because he/she have complications. Care takers or mothers play a critical role in success of the program through her encouraging her child to take the therapeutic food but her misbelieves may be a great challenges and may lead to increasing defaulters. In the third part of the study where quality of reporting data were reviewed, it is clear that poor quality of the reported data including low completeness, inability to extract outcome indicators due to inconclusive data in some monthly reports. the well documented outcome indicators indicate that low cure rate and high defaulters.

Conclusions: Different gaps were identified in the SAM program implementation through the quantitative study mainly low coverage of SAM training, more detailed and complicated report's contents, non-adherence of physician with the guideline and lack of coordination between physicians and health workers of the program. Other challenges identified from the qualitative study especially the role of care takers and mothers and their misbelieves on modern medicine, but part of challenges to the improving of SAM program are related to the program itself; this like: irregularity in supplies of the therapeutic food, lack of supervision and follow-up. Participants emphasized on community nutritional education, investment on community volunteers and outreach activity as an effective tools to improve SAM program performance and the use of the available social media in reporting and feedback. The content of the monthly reports are of poor quality. Defaulter rate is still high.

Section 1. Background:

Every year 10.6 million children die worldwide due to preventable conditions such as pneumonia, diarrheal, malnutrition, malaria and measles. Of these deaths, malnutrition accounts for about 2.2 million deaths annually in children under the age of 5.¹ In 2008, Yemen had launched a national programme for the management of severe acute malnutrition with an aim of decreasing childhood mortality and illnesses, meeting the MDG by 2015.²

The Yemen nutrition program YNP on management of severe acute malnutrition is composed of two arms; Outpatient Therapeutic feeding Program (OTP) and Inpatient Therapeutic feeding centre (TFC). The inpatient TFC program is a hospital level program and has been known to provide better health care for severely malnourished children while, the OTP is a community level program and successfully examined in many low resource settings with organization and follow up from primary health units, health centres and/or hospitals.³⁻⁵

Monitoring of the nutritional therapeutic program for management of Severe Acute Malnutrition (SAM) in Yemen are limited to the outcome indicators (cure rate/defaulter rate and death rate) . These indicators were extracted from the monthly reports in case of regular reporting, for example death rate among children with SAM reported from Al-Sadaqa hospital in Aden was 5% in 2011⁶. A lot of information about monitoring and evaluation of the process of implementation of the program are not known especially in areas of case finding/reporting and feedback.

Section 2. The implementation barrier:

Improper monitoring of the OTP clinics of SAM program implementation process

The system failures might be:

- Lack of training of health professionals
- Unavailability of clinical guidelines
- Non-compliance to referral policy
- No feedback from and to upper level and lower level
- Communication barrier between clinicians and program managers at the operational level and the upper level.

- Surveillance weakness regarding reporting and feedback

The research team from Hadramout University and MOPH in Yemen (Prof. Abdulla Bin Ghouth as a principle investigator and Dr Salem Yser Meftah as co-investigator) succeed in getting a fund from WHO/EMRO with collaboration of Alliance for Health Policy and Systems Research (AHPSR) and with technical support from institute of community and public health (ICPH) medicine in Berzeit University (Palestine) within the iPIER project about implementation research. This project have specific research question and objectives :

The research question

What are the determinants and options of monitoring and evaluation practice in the processes of case detection, reporting and feedback in the OTP clinic of SAM program including referral and communication mechanisms.

Research objectives

1. To understand case detection, reporting and feedback processes of SAM in OTP clinics among GP/health care providers and managers Yemen 2015.
2. To identify factors impeding good monitoring and evaluation practice among GP/health care providers and program managers in case detection, reporting and feedback processes of SAM cases in OTP clinics, Yemen 2015.
3. To explore options of improving the monitoring and evaluation practice among GP/health care providers and program managers in case detection, reporting and feedback processes of SAM cases in OTP clinics, Yemen 2015.

Section 3: Tools used, target group and setting of the study:

Tools used are:

1. **Questionnaire of closed questions**: to collect quantitative data about the process of case detection, reporting and feedback regarding management of severe acute malnutrition (SAM) of children less 5 years of age.
2. **Semi-structured interview**: to collect qualitative data about challenges facing the process of case detection, reporting and feedback regarding SAM management
3. **Checklist**: to collect quantitative data from the reporting forms used in OTP regarding SAM management

Targeted Groups:

- Managers of SAM program
- Health workers in SAM program
- pediatric specialist and GPs in the targeted health facilities

Settings:

- Four governorates (two from the south and two from the east of Yemen)
- 20 districts
- Six hospitals and 16 health centers

Project Progress

Activity	2015			2016				progress	comments
	Oct	Nov	Dec	Jan	Feb	Mar	Apr		
Selection/development of data collection tool								achieved	Actually it was achieved in may-June 2015 and reviewed and approved in October 2016
Submission of protocol to EMRO ERC								done	
Sign the first contract								On 31 October 2015	Budge divided into contracts , the first one is 43% of the requested fund in the proposal
Recruitment of participants (informed consent)								Still ongoing	Within the ask of data collection
Training								Done	16 data collectors were trained to collect data in two governorates
Data collection								completed	Till 15 March 2016 , 213 participants were completed their questionnaires (97%) , and 96 were interviewed. And respond to questionnaire and 23 health facility were collected data about their reporting (100% from the target)
Sign the second contract								done	In 10 March 2016
Data management								completed	Data base is designed using SPSS version 20 for quantitative data , data were cleaned , coded and entered to the personal computer using SPSS program, data analysis was completed in February 2016 Qualitative data: transcripts was developed manually, content analysis was completed manually, sharing advice with ICPH through Skype was conducted in February 2016 and accordingly analysis of qualitative data completed.
First activity report								done	First report was submitted in December 2015
Data analysis								done	Completed in March-April 2016
Research and financial reports								done	The financial report is already, will sent in May /2016
Additional data analysis/integration of findings								done	Will be in May 2016 during workshop in Cairo through which manuscript will be prepared
Final project report								done	This is the final report

Limitation:

1. Security problems
2. Limited health workers in the nutrition feeding programs less than the planned in the project

Interventions applied o overcome the limitation:

1. Replacement Shabawh governorate (due to security problems) by Wadi Hadramout
2. Expand the geographical scope and targeted health facilities within the available fund boundaries: for example increase the districts from 20 districts to about 21 districts and health facility from 22 to 48 health facilities.

Looking forward:

1. Provide the final technical and financial report by the end of April/beginning of May 2016
2. Literature review up to May 2016
3. Prepare manuscript for publication (May 2016)
4. Participation in the coming workshop (16-18 May 2016)

Section 4: Results & Interpretation

PART ONE

QUANTITATIVE DATA ANALYSIS (PARTICIPANT'S SURVEY)

1. Description of participants:

The data collected through three methods: questionnaire, review of program reports for quantitative data and interview for qualitative data. This part is present the finding obtained from data analysis of questionnaires that returned from three governorates (n=213). data was collected by trained health workers through the period from November to February 2016. Data management and analysis of the completed questionnaires were done in March 2016. The proposed participants were 220 persons, the returned questionnaires are 215 copies (98%) , two questionnaires were canceled due to incomplete data, so the eligible questionnaires for analysis are 213 questionnaires.

Data were analyzed for the three participant's categories: program managers (n=14), physician (pediatricians or GP, n=63) and health workers engaged in SAM program (n=136). Missing values are not included in analysis so the denominator include only participants responses without those did not respond. so all the percentages calculated as valid percentages.

About 49% of the participants from Hadramout governorate, 32% from Aden governorate and 18.8% from Lahj governorate. Most of participants were females (58%), 49.% have post secondary diploma and 35% are nurses. The mean age of participants are 34.3 years (SD=7.6 years) and within the age range of 19-55 years. About half of participants have previous training regarding SAM management guideline (51%), but physician have low chance for training (32/62, 40%) (Table. 1).

The gap identified here is low coverage of SAM training.

2. Knowledge about SAM management:

In the four questions regarding SAM management, the range of proportion of participants given of correct answer is from 55% to 67% (the mean is 66.3%)

The highest mean proportion of the correct answers were reported by program managers (74.8%) followed by physicians (66.3%) while lowest mean proportion of correct answers were reported by health workers (57.8%).(Table.2). ***The gap identified here is the poor knowledge of participants regarding SAM management.***

3. Participant's practice regarding SAM case detection and management:

About 54% of participants reported that the targeted discharge Wg and Wg/Hg in comparing with admission Wg and Wg/Hg is available in his/her clinic and 51% have a copy of SAM management guideline. Only 43% of participants practice SAM management according to the guideline while 25% of them feel always difficulty in using the guideline.

Regarding case detection, 51% reported they detect SAM children under 5 years of age during the last two weeks preceding the day of data collection, while only 31% of the reported that they treat SAM cases during the last two weeks. Refer of SAM children to TFC was reported by 41% of participants and only 24% of them reported that they treat SAM children in phase 2 in the outpatients during the last two weeks preceding the study. Only 24% of participants reported that they are not satisfied at all with the SAM management guideline (Table. 3). *The gap identified here is unavailability and difficulty of using the guideline in detecting and treating SAM children especially among Physician.*

4. The Ability of SAM program to detect and manage SAM children:

about 54% of participants did not detect any SAM child during two weeks preceding the data collection and 69% did not treat any case of SAM and 65% of participants did not refer any SAM case to the TFC. Physician who is the qualified person for case detection and management and expected to play a cornerstone in case detection and management, they reported 0 case regarding case detection (27/54, 50%), case treated (45/57, 79%) and referral (27/48, 56%) (Table. 4). *The gap identified here is poor physician adherence with SAM management guideline.*

5. Reporting practice:

Less than half of participants fill the different reporting forms: filling the OTP chart (45%), the transfer form (38%), the referral form (33%), the registration book (47%) and the monthly report (40%). Although 51% of participants reported that the reporting forms were regularly and always available but only 30% of them reported that data in the forms were clear and understandable (Table. 5). *The gap identified here is the huge data and difficulty in understanding the reporting forms.*

6. Reasons behind no reporting:

The most frequent reason of no reporting mentioned by those did not report (n=42) is that the reporting forms were not available in the clinic (26% for OTP chart, 51% for referral form), the second reason is that the participant being not the responsible person of reporting (92% for monthly reporting) (Table. 6). *The gap identified here is lack of coordination between physicians and health workers lead to missing SAM cases due to no reporting.*

7. Feedback:

Feedback indicators were also low. health workers or clinic officers reported that they received feedback from program managers about the different performance of reporting: 55% about completeness, 51% about timeliness, 53% about comments and 53% about data analysis. Only 17% of participants mentioned they received newsletter from the program managers (Table. 7). Regarding feedback from program managers to the lower level: similar findings were reported by program managers (Table. 8). The most communication tools used by program managers for communicating feedback to the lower level were telephone (57%) followed by the social media (14%) (Table. 9). *The gap identified here is the feedback is mainly verbal by telephone and be not documented.*

Conclusions of the part one:

In this study, gaps are identified regarding case detection/ management , reporting and feedback among program managers, physicians and health workers of the SAM program in three governorates in Yemen. These gaps are:

1. low coverage of SAM training.
2. poor knowledge of participants regarding SAM management.
3. Unavailability and difficulty of using the guideline in detecting and treating SAM children especially in Physician.
4. Poor physician adherence with SAM management guideline.
5. Huge data and difficulty in understanding the reporting forms.
6. lack of coordination between physicians and health workers lead to missing SAM cases due to no reporting.
7. Feedback is mainly verbal by telephone and be not documented.

Tables

Table. 1: Socio-demographic characteristics of 213 participants

Characteristics	Participant's category			No. (%)
	Program manager	Physician	Health workers	
Governorate				
- Lahj	3	10	27	40 (18.8%)
- Hadramout	10	41	54	105 (49.2%)
- Aden	1	12	55	68 (32%)
- Total	14	63	136	213 (100%)
Sex				
- Male	5	27	54	86 (42%)
- Female	7	24	29	119 (58%)
- Total	1	1	1	205 (100%)
Age (in years)				
- Mean	42	35	33.4	34.3
- SD	6.3	7	7.5	7.6
- Minimum	35	21	19	19
- Maximum	54	50	55	55
- Range	19	29	36	36
Qualification				
- Post-secondary diploma	7	0	96	103 (49%)
- Bachelor	3	36	16	55 (26%)
- Master	3	18	0	21 (10%)
- PhD	1	9	0	10 (5%)
- Others	0	0	1	21 (10%)
- Total	14	63	133	210 (100%)
Professional title				
- Specialist	4	25	0	29 (13.5%)
- GP	1	39	0	40 (19%)
- Medical assistant	1	0	32	33 (15.5%)
- Nurse	6	0	68	74 (35%)
- Midwife	1	0	22	23 (11%)
- Public health worker	1	0	4	5 (2%)
- Others	0	0	8	8 (4%)
- Total	14	64	134	212 (100%)
Training about SAM management guideline				
- Yes	12	32	62	106 (51%)
- No	2	30	71	103 (49%)
- Total	14	62	133	209 (100%)

Table. 2: Knowledge about SAM management

Question	answers	Participant's category			Total No. (%)	Comments
		Program manager No (%)	Physician No (%)	Health workers No (%)		
In phase one of SAM management	Rapid weight gain at this stage is dangerous	11 (78.6%)	42 (71%)	71 (61%)	124 (65.6%)	Correct answer
	Rapid weight gain at this stage is preferable	1	9	20	30 (15.9%)	
	Rapid weight gain at this stage is necessary for cure	2	8	25	35 (18.5%)	
	Total	14	59	116	189 (100%)	
F75 used in	Phase 1	11 (84.6%)	41 (72%)	67 (61.5%)	119 (66.5%)	Correct answer
	Transition phase	2	8	13	45 (25%)	
	Phase 2	0	5	5	15 (8%)	
	Total	13	57	109	179 (100%)	
In transition phase, child should treated in	At home	0	2	11	13 (7%)	
	Out-patient	2	20	46	68 (38%)	
	In-patient	12 (86%)	33 (60%)	54 (48.6%)	99 (55%)	Correct answer
	Total	14	55	111	180 (100%)	
Whenever patient have good appetite and no acute major medical complication they enter	Phase 1	2	2	12	16 (9%)	
	Transitional phase	4	21	30	55 (31%)	
	Phase 2	6 (50%)	38 (62%)	64 (60%)	108 (60%)	Correct answer
	Total	12	61	106	179 (100%)	
Mean proportion of the correct answers		74.8%	66.3%	57.8%	66.3%	

Table.3: Practice of participants toward SAM management

Question/options	Participant's category			Total No. (%)
	Program manager	Physician	Health workers	
Does the targeted discharge Wg and Wg/Hg in comparing with admission Wg and Wg/Hg is available in your clinic				
- Yes	10	27	69	106 (54%)
- No	3	36	51	90 (46%)
- Total	13	63	120	196 (100%)
Did you have a copy of guideline of SAM management				
- Yes	11	25	60	96 (51%)
- No	2	33	56	91 (49%)
- Total	13	58	116	187 (100%)
Did you practice for SAM management according to this guideline				
- Always	9	23	53	85 (43%)
- Sometimes	2	12	21	35 (18%)
- Never	2	24	52	78 (39%)
- Total	13	59	126	198 (100%)
Did you feel difficulty in using this guideline				
- Always	1	12	33	46 (25%)
- Sometimes	5	18	34	57 (31%)
- Never	7	25	49	81 (44%)
- Total	13	55	116	184 (100%)
Did you discover a child less than 5 years with SAM during the last two weeks				
- Yes	10	34	59	103 (51%)
- No	4	29	66	99 (49%)
- Total	14	63	125	202 (100%)
Did you treat any SAM case in out-patient in the last two weeks				
- Yes	8	16	34	58 (31%)
- No	6	45	77	128 (69%)
- Total	14	61	111	186 (100%)
Did you refer any case to TFC in the last two weeks				
- Yes	9	33	33	75 (41%)
- No	3	29	77	109 (59%)
- Total	12	62	110	184 (100%)
Did you treat any SAM case in the last two weeks as phase 2 in outpatient				
- Yes	7	9	28	44 (24%)
- No	6	51	81	138 (72.7%)
- Total	13	60	109	182 (100%)
Did you satisfied with SAM guideline				
- Satisfied	8	24	41	73 (43%)
- to some extent	2	21	34	57 (33%)
- Not at all	3	12	28	43 (24%)
- Total	11	56	103	173 (100%)

Table 4: The ability of the system to detect and manage SAM children

Question/options	No of SAM children detected	Participant's category			Total No. (%)
		Program manager	Physician	Health workers	
SAM cases detected during the last two weeks	0 cases	4	27	64	95 (54%)
	1-10 cases	7	22	39	68 (39%)
	11-22 cases	2	5	6	13 (7%)
	Total	13	54	109	176 (100%)
SAM cases treated during the last two weeks	0 cases	5	45	73	123 (69%)
	1-10 cases	7	8	28	43 (24%)
	11-66 cases	1	4	7	12 (7%)
	Total	13	57	108	178 (100%)
SAM cases referred to TFC	0 cases	3	27	74	104 (65%)
	1-10 cases	8	19	26	53 (33%)
	11-15 cases	0	2	1	3 (2%)
	Total	11	48	101	160 (100%)
SAM cases treated in the last two weeks as phase2 un outpatient	0 cases	6	50	80	136 (82%)
	1-10 cases	4	6	14	24 (15%)
	11-30 cases	0	2	4	6 (3%)
	Total	10	58	98	166 (100%)

Table 5: Reporting Practice of participants

Question/options	Participant's category			Total No. (%)
	Program manager	Physician	Health workers	
Did you fill OTP chart				
- Yes	12	17	61	90 (45%)
- No	2	44	62	108 (55%)
- Total	14	61	123	198 (100%)
Did you fill the transfer form				
- Yes	8	19	48	75 (38%)
- No	6	41	75	122 (62%)
- Total	14	60	123	197 (100%)
Did you fill referral form to TFC				
- Yes	10	20	35	65 (63%)
- No	4	41	87	132 (67%)
- Total	14	61	122	197 (100%)
Did you fill registration book in outpatient				
- Yes	11	15	65	91 (47%)
- No	3	45	57	105 (53%)
- Total	14	60	122	196 (100%)
Did you fill the monthly report				
- Yes	11	9	57	77 (40%)
- No	3	49	63	115 (60%)
- Total	14	58	120	192 (100%)
Does the reporting forms are regularly available				
- Always	11	15	62	88 (51%)
- Sometimes	2	7	14	23 (13%)
- Never	1	31	30	62 (36%)
- Total	14	53	106	173 (100%)
Did data in the reporting forms are clearly stated and understandable				
- Very clear	9	8	28	45 (30%)
- With some difficulty	3	15	39	57 (38%)
- Very difficult	2	15	32	49 (32%)
- Total	14	38	99	151 (100%)

Table. 6: Reasons behind no reporting

item	Reasons of no reporting	No	%
No filling of the OTP chart	the form is not available in the clinic	11	26%
	no OTP in the canter	6	14%
	it is not my responsibility	12	29%
	the form available only in the TFC clinic in hospital but not in paediatric or GP clinic	5	12%
	i refer the cases to TFC in hospital so i did not fill the OTP form	2	5%
	I am not trained about the guideline	6	14%
	Total	42	100%
No filling of the transfer from	the referral form is not available in the clinic	10	34%
	i am working in referral hospital where admission unit is available so we didn't refer to any hospital	8	28%
	No TFC in our facility	2	7%
	it is not my responsibility	9	31%
	Total	29	100%
No filling the referral form	the form is not available in the clinic	11	51%
	There is no admission unit in the facility	4	19%
	the SAM children seen by nutrition specialist in the TFC in Mukalla hospital " this may be verbal refer	2	10%
	my hospital is the referral hospital in the government so i am working in this hospital	4	20%
	Total	21	100%
No filling of the registration form	no registry in the clinic	7	25%
	no cases	1	4%
	it s not my responsibility	19	67%
	I am not working now in nutrition clinic because there is no treatment diet (Plumping nuts)	1	4%
	Total	28	100%
No monthly report	i am not the responsible person for monthly report preparation	36	92%
	no follow up	2	5%
	No OTP in the centre	1	3%
	Total	39	100%

Table. 7: Feedback from the upper level to the lower level

question	Answer	No	%
Did you receive feedback from the upper level to you about completeness of reports (n=74)	Yes	41	55%
	No	33	44%
Did you receive feedback from the upper level to you about timeliness of reports (n=73)	Yes	37	51%
	No	36	49%
Did you receive feedback from the upper level to you about comments on report content (n=73)	Yes	39	53%
	No	34	47%
Did you receive feedback from the upper level to you about analysing the findings (n=71)	Yes	34	47%
	No	37	53%
Did you receive from the upper level regular newsletter (n=71)	Yes	12	17%
	No	59	83%

Table. 8: Feedback from program managers to the lower level

question	Answer	No	%
Did you sent feedback to the lower level about completeness of reports (n=17)	Yes	8	47%
	No	9	53%
Did you sent feedback to the lower level about timeliness of reports (n=16)	Yes	9	56%
	No	7	44%
Did you sent to the lower level about comments on report content (n=16)	Yes	8	50%
	No	8	50%
Did you sent feedback to the lower level about analysing the findings (n=16)	Yes	6	38%
	No	9	62%
Did you sent to the lower level regular newsletter (n=16)	Yes	2	13%
	No	14	87%

Table . 9: Tools used for feedback communication by 14 program managers

Tools used	No	%*
Telephone	8	57%
Social media	2	14%
Nothing	6	42%
Others	2	14%

* proportion%

Results

PART TWO

QUALITATIVE DATA ANALYSIS

The target group:

A total of 99 program managers, clinic officers and other health workers were interviewed through semi-structured open question to address challenges facing case detection, reporting and feedback as well as to explore the available opportunities and their suggestions to improve the SAM program.

The method:

Before data collection and during design of the semi-structured interview, nine themes were constructed, they are:

1. factors impeding case detection, 2. factors impeding reporting, 3. factors impeding feedback, 4. option in case detection, 5. option in reporting, 6. option in feedback, 7. suggestions to improve case detection, 8. suggestions to improve reporting, 9. suggestions to improve feedback.

when we building steps for data analysis using content analysis (Thematic analysis), at first, we read through all files and write the manuscript, then read it second time, then the themes are re-constructed into three themes are:

A. factors impeding case detection, reporting and feedback of SAM program.

B. Available opportunities in SAM program.

C. Suggestions to improve SAM program.

For theme A, a series of sub-themes are extracted and further re-constructed after coding the data extracted from the transcripts. The sub-themes (categories) for theme A are:

1. Cadre capacity
2. Health facility readiness
3. SAM children related problems
4. Care takers perspective
5. The program effectiveness

A: Factors impending case detection, reporting and feedback of SAM program.

1. Cadre Capacity

1.1 Poor adherence with the SAM guideline: Poor adherence with the SAM guideline due to different reasons; a. some cadres did not trained about the guideline or the reporting procedures, one health worker in Hadramout said that "*i am not receive enough training*". another female health worker in Shuheer health canter from Hadramout add that "*the SAM guideline is available in the centre but it is not understandable for me because i am not trained about*". b. *the content of the guideline are unclear or not understandable and there are no one to asked him about this uncertainty* "one health worker from AlSheher hospital in Hadramout said". Other example of controversial findings in the guideline is *there are different information reported in the guideline content comparing with the explanatory tables especially data about Vitamin A* , one physician from Mukalla hospital in Hadramout said" c. another reason affecting negatively on the doctor's adherence to the SAM guideline is the turn-over of physicians to other department. One program manager from Aden conclude that "*the cadre is not stable in hospital and most of them are postgraduate candidates and are residents in hospital and they exposed to rotation from one department to another raising the problem of doctor's availability leading to poor adherence with the guideline.*" d. while doctors being not convinced toward SAM guideline is a big challenges especially if doctors are paediatricians on whom case management, and improving status of severely malnourished children based on them. doctors did not give reasons behind their rejection but it is understood from behaviour of those doctors they thinks it is not based on scientific ground as he/she did not exposed to operational training of SAM management during their academic study. One doctor in Al-Sheher

hospital said that " *the guideline is available and clear but i am not convinced about some parts of the content*" while one program manager from Hadramout described the attitudes of paediatricians toward SAM guideline, he said that " *regarding guideline there is a problem with paediatrician only; they are not convinced on SAM management guideline*".

1.2 Shortage of cadres: it was observed during data collection that some program managers and health workers have more than responsibilities beside their work in SAM program or OTP clinic due to shortage of cadres. this observation was confirmed by some participants; One doctor from Al-Sheher hospital in Hadramout said " *the main problem is health workers are not working as full-time in the program; they have another responsibilities*". it was also observed that lost of the cadres working in OTP are females but they are also not fixed; one health worker from Aldees hospital in Hadramout said " *there is a problem; most of the female health workers in OTP are not fixed and they have other woks in other departments at the same time*"

1.3 Doctors were not cooperate to refer cases to OTP: referral of Sam children to OTP clinic to follow SAM management according to guideline is important and need coordination with doctors and the health facility administration, this coordi may be lacked in some facilities reflecting on missing SAM children in need for care as one health worker from Hadramout reported that " *Doctors did not cooperate with program*", other health worker add " *The system in the facility did not encourage the referral to OTP clinic as well as doctors did not cooperate with the program*"

1.4 Undergraduates are not exposed to SAM management guideline during their pre-service training: this is an important problem addressed by one program manager from Aden " *lack of training or addressing SAM*

management guideline in the curriculum of pre-service training of medical faculties, this problem was clear among newly graduates who manage most of cases in hospitals , clinics, emergencies but they lack basic knowledge"

2. Health facility readiness:

2.1: Poor OTP Readiness: OTP is the outpatient therapeutic program, it is one of SAM Program components (community component) being in the health facility and aimed to detect and manage SAM children according to the readiness of the health facility to run this OTP including staff and equipment and coordination. Ideally each OTP has at least the measurement tools (Wg scale, Hg scale and MUAC measurement) and treatment diet and registries as well as trained staff to run the OTP or refer cases to in-patient therapeutic feeding care in main hospitals (TFC). in this study; the OTP are available in all the studied health facilities, some trained health workers are working in facilities that still no OTP established, this is an issue of coverage . but in the studied health facilities where OTPs are already exist and running; there are different forms of running the OTPs in different health facilities. Most of the facilities provide independent place for OTP and being equipped by measurement tools, staff and treatment but some of the facilities provide OTP in a disorganized form and may lead to missing SAM children. some participants claimed shortage of scales for measurements, OTP is uncomfortable and/or poor organized in some facilities: one health worker in Al-Dees district hospital reported that "*there is a OTP clinic, Wg, Hg scales and MUAC measurement are available, but there is a problem, the OTP clinic someday used as a GP or paediatric clinic due to shortage of places leading to overload of work or sometimes we stop the OTP until doctor finish his/her patients*) another midwife from Al-Sheher MCH centre said that "*We are in MCH canter facing many*

challenges: for example there is no specialized room for nutrition clinic, we are midwives beside our works for pregnant women care we are also responsible for OTP in the same time and in the same place" while one clinic officer in Hashed medical complex in Al Mansurah (Aden) said that " the place of OTP is small and not suitable with the number of patients who attend daily in the centre"

2.2 poor coordination within the facility: this an administration issue, especially in district and general hospitals where a lot of staff of different specialities are available. one of critical point of poor coordination is the coordination between OTP staff and paediatricians or paediatric clinic in hospitals where SAM children may be missed due to poor coordination for case detection or referral. one paediatrician from Mukalla general hospital said that "*in paediatric clinic there are no MUAC measurement, and sometimes HG scale is not present, there is no problem in case detection , cases must be referred to OTP due to no measurement tools in paediatric clinics so this overload the OTP work, why the facility did not provide us these tools to detect cases in paediatric clinic".* in Syoun general hospital (a referral hospital in Wadi Hadramout); one physician claimed unavailability of TFC in hospital making management of critical cases is a big problem he said that "*no place for TFC and this is a big problem in Syoun hospital).*

2.3: improper administrative readiness: health facility administration facing many services and given priority for some program than others, staff in SAM program or they are working in OTP have a perception that health facility administration looking for SAM program is not a priority, this perception is confirmed by a lot o observations: one health worker from Al-Sheher hospital conclude that "*there is a coordinator for the program but have another responsibilities this reflect that the program is a not a priority in the administration of our facility"* another doctor from

Al-Sheher hospital also reported another form of administrative commitment to the SAM program " the coordinator is part-time work in OTO, no enough staff this because the SAM program is not a priority for our facility administration" but the tragedy form of administrative non-commitment was reported by one doctor in Ibn Khaldoon hospital in Lahj, he said " *information sharing is important , we did not know anything; can you trust me, if you ask the manager of the hospital how percentage of malnourished children in our hospital?; he did not know!*"

2.4 Weak logistic maintenance: most of program mangers claimed there is no photocopy or some health facility did not provide them the simple logistics like papers and pens while internet is not available in most facilities and only personal mobile phones used for reporting and feedback. One of the important administrative and logistic weakness is unavailability of stores. One program manager in Hashed medical complex in Al-Mansurah in Aden said that " *there is no store for record keeping nor good store for medical diet treatment for malnourished children*" another program manager from AlSadaqah hospital in Aden add that " *registry is available but photocopy is not available and it was expected to be available because it is important for promotion of our work*" and he add " *there is no net nor telephone or fax and no fuel for electricity*"

3. SAM children related problems:

3.1: Problem of defaulters: high defaulter rates were frequently observed in different centres, could be the military and political crises occurred in 2015 was one reason, but it was also observed even in the stable areas. "levels of defaulters is high, this is general problem in the program" one doctor in Aden general hospital said; another program manager from Hashed medical complex in Al-Mansurah (Aden) add " *most of children respond to treatment and little percentage of them did not respond*

because of other disease. percentage of defaulters was increasing due situation of the war and return back of most families to their houses which were affected by the war"

3.2 child refuse treatment: children with severe malnutrition and improved from phase 1 to phase 2, they can be take the therapeutic food in out-patient or at home. The only therapeutic food recommended by SAM management guideline is RUTF (Ready to Use Therapeutic Food). Program managers, doctors and health workers frequently complain that child refuse this RUTF due its taste, and there are no other alternative except F100 which is not recommended for use at home or F75 which is recommended for SAM children in phase 1 and be in in-patient. One health worker in Fowah health centre in Hadramout said that "*many cases didn't accept the therapeutic food due to the taste is not suitable*" another health worker from Syeon hospital in Hadramout add "*about 25% of children did not accept the therapeutic food*" but not all children refuse RUTF due to taste "*sometimes children did not accept the RUTF taste and sometimes other children like it*" another health worker from Al-Sheher hospital in Hadramout said. Children who refuse may transfer to in-patient , program manager in Mukalla hospital and being responsible of TFC (therapeutic feeding centre for in-patients) said that "*most of cases transferred from OTP due RUTF taste , this is may occur the child did not accept RUTF taste but milk can give through naso-gastro tube (NGT)*". no alternative to RUTF if child refuse it takes the concern of care providers; one doctor from Al-Sheher hospital from Hadramout said that "*many children did not accept therapeutic food and there is no alternative like biscuit or milk especially those have other diseases*". the same problem was addressed by one health worker in Ghail Bawazeer hospital "*some children did not accept the therapeutic food but the only item available; no alternative to RUTF*"

3.3 child have complications or other diseases: not only the child refuse RUTF due to taste , some participants referred this refuse because the child is sick with other diseases or have complications. One health worker from Al-Dees hospital in Hadramout conclude that " *sometimes some children didn't accept the RUTF according to the number of predetermined pockets for him/her; or his appetite is not good due to that he/she have anaemia or incidental diseases and be refereed to GP clinic*" one program manager from AlSadaqah hospital in Aden add " *this was occurred in our hospital in children have complications; they stay in hospital for few days then the mother request discharged due to the current situation*" another program manager from Hashed medical complex in Aden report that " *most children respond to treatment and small proportion did not respond due to that they are sick*" .

4. Care takers perspective

4.1 Mother's role in encouraging her child to take the therapeutic food:

Even child didn't accept the RUTF, mother must play a critical role to encourage her child to take the RUTF; one doctor from Ibn-Khladoon hospital in Lahj said that " *it is correct; we observe child unable to eat or refuse to eat but this may referred to the mother, because she didn't educated or didn't receive enough advice*" this observation was confirmed by another female doctor from Al-Mansurah medical complex in Aden " *the child didn't accept the therapeutic food except after difficult trails from the mother*". usually care providers ask mothers if her child eat the RUTF at home, so mothers awareness is very important, one health worker from Syeon in Hadramout report that " *RUTF was given to the child and we ask mother if her child eat the RUTF, she answer: yes; the other children at home need for this RUTF but in fact they are not sick!*" another health worker from Seuyon hospital in Hadramout add " *care taker and the family may didn't trust on this RUTF*". mother have no

enough patience to encourage her children to take the RUTF was reported by one female program manager from AlDees hospital in Hadramout *"most of mothers who we observed in our work had no enough patience for follow the SAM program recommendation regarding RUTF packets given for her children and coming in the next visits asking if there are alternatives"*

4.2 The mother and family misbelieves on therapeutic food: although care takers brought their sick children to the clinic, and when care provider detect severe malnutrition if the sick child, usually care taker refer this child to OTP clinic where done for him/her initial assessment and given RUTF if the child in phase 2 or refer to TFC if the child in transitional phase or phase I. Acceptance of care taker and their compliance with these recommendation is the subject of their believes. yes the poor socio economic condition of the family may play a negative environment to manage the SAM children properly but the most important part of this tragedy is the misbelieving of care takers not only on therapeutic food but also on the concept of SAM management as a health problem that shaping their seeking behaviour model. One program manager from Ibn Khaldoon hospital in Lahj conclude this misbelieving *" there are problems, for example: the socio economic conditions of the mother and the family, trust on the alternative wrong culture of mothers, seeking from like believing on magic or sorcery, some request Quran reading for management of the sick child"*. mother ignorance and illiteracy could be the reason behind their behaviour, One health worker from Al-Mukalla hospital in Hadramout said that *" some mothers didn't follow the recommendations because of the ignorance"*. another health worker from AlDees hospital add *" sometimes, may be the mother was not educated or illiterate leading to discontinuation of treatment and didn't follow the program"* another health worker from

Madodah health centre in Seuyon (Hadramout) conclude this problem in few words "*the mother didn't aware about the importance of nutrition, she in need for education*"

4.3 Mothers refuse admission/referral of her children to TFC: In general; most children refuse admission their children to in-patient ward (TFC) , and if they were from the centre; they refuse referral to hospital for admission. Admission criteria as recommended by SAM nanagemnet criteria are for very severe malnutrition children in phae I or transitional phase and need more specific therapeutic food(F75) or (F100) , these components are not recommended for given at home. many reasons behind this behaviour, but even those mothers living in an urban areas and being easily accessible to hospital were also refused to admit, this case like in Makalla city; one health worker from Altawelah health unit in Mkukalla said that "*about 70% of children , their relatives refused referral them to hospital and didn't communicate to us after given them the treatment, and when we call them they didn't respond, and when the child becoming very sick they are coming t us!*" another doctor from Ibn Khaldoon hospital in Lahj justified the mother's refusal admission in hospital "*there are other reasons regarding to the hospital: poor services, mosquitoes spread, no place for care taker sleeping*"

4.4: Mothers refuse admission/referral of her children due to socio-economic reasons: Yemen is one of poorest countries in the world, poverty is a clogged factor to the utilization of nutritional services. One program manager from Al-Burokah (Aden) said that "*we facing challenges in referral the complicated cases to the central hospital, families refuse referral for financial and living reasons, this issues should be prevented in future strategic planning*" . the cost of the care. the cost of transport were threading environment to the utilization of the nutrition services, these explanations were reported elsewhere in this study: in Ibn

Khaldon hospital " *there are social problems like: cost of treatment*" one health worker said., another health worker from Ghail Bawazeer in Hadramout said that " *poor living conditions is challenging and in case of long treatment period this strains the financial capacity of the mother and the family*"

4.5 Care taker refuse admission/referral her child due to social reasons:

it was reported elsewhere what caretakers disclose about her social and personal life that make her refuse admission or attend her child to clinic. one female health worker reported that " *there are problems related to mothers beside transport problems for example: change place of housing, disease of mother and no one take care for her child when she is sick, other problem is mother's feeling of depression if her child's weight improving in first visit then deteriorated in next visits*" is not improving". in rural areas women cannot go to the city alone with her child, mostly the father accompanied them but there is a problem if the father is busy; this was said by one health worker from Madodah health centre in Hadramout " *the mother follow the recommendations but she facing problem of transport because the father was busy in the day and there is no afternoon clinic*" another doctor from Seuyon hospital in Hadramout add " *father work at the day may preventing the sick child to reach the clinic especially if the family in remote areas*"

4.6 mothers refuse admission/referral due to inaccessibility problems:

The admission services for SAM children are only available in some central hospitals in main cities, since most SAM children from rural or sub-urban areas, they facing difficulty either for transport cost or unavailability of transport. one health worker from Al-Dees hospital from Hadramout said that " *increase in transport cost preventing accessibility to OTP clinics beside poverty status of the families*", another doctor from Seuyon hospital in Hadramout add " *families houses far away*

from the clinic; and most of them from rural areas and some from very remote areas like mountains and desert , this is a form of difficulty in accessibility" while one program manager from Mualla medical complex in Aden conclude that "mostly; care taker refuse admission her child due that she haven't enough money for transport so she cannot access to services!" . one health worker from Al-Aqaad health centre in Hadramout add another dimension for inaccessibility "the current country crises limit the movement of people: for example the fuel crises"

4.7 care takers refuse admission/referral due to long treatment period:

for SAM children in phase 2 or transitional phase it is recommended to treat them in TFC (the therapeutic feeding centre in in-patient department in hospital); in general most mothers refuse admission due to the long period of admission and they prefer to take the therapeutic food to their home, alternatively the care providers gave them RUTF at home , it is used for SAM children in phase 2 then if the child isn't improved mother bring him/her in very complicated status. long period of treatment in admission department was not preferable among most mothers either due to social/economic reasons or without reason. One doctor from Al-Sheher hospital said that " most mothers refuse admission and wish to take the diet to home instead to stay long period in hospital" another program manager from mukalla hospital in Hadramout add " in many cases; mother refuse admission in hospital especially mothers of children less than 5 months of age, this problem we facing it in OTP when the condition of SAM child in need for referral to TFC"

5. The program effectiveness:

The effectiveness of the SAM program is a result of coordination between the program and the health facility, the SAM program provide registries, report forms, therapeutic food, provide training of staff and community volunteers and outreach activities. The health facility provide the physical

place, staff and some logistics and coordinate between staff. program effectiveness is measured within the availability of the before mentioned conditions and achieving coverage and outcome indicators. the most problems related to program effectiveness are: reporting related problems, non-proper investment on community volunteers, irregularity of supplies of therapeutic food and poor supervision.

5.1 Reporting related problems: these are summarized in the form of: a. unavailability of reporting forms including registries in some private clinics but the most problematic issue is the difficulty in understanding the reporting forms and its complexity and being more long so some data were not filled. One doctor from Syeon hospital in Hadramout claim the shortness of reporting forms "*there are no reporting forms but there are registry and monthly report form*" while another health worker in Fawah health unit in Mukalla said that "*there are no reporting forms*". some participants being confused between the different reporting forms, one program manager in Mukalla hospital said that "*there are no formal reporting forms but there are forms for investigation and case's recording*"

regarding complexity of reporting forms; one program manager in Ghail Bawazeer hospital in Hadramout said that "*the last version of reporting form was unclear and need training about*", another program manager from Al-Dees hospital said that "*report registry was not clear because of the limited space for writing*" while another health worker from Halfoon health centre in Hadramout clarify this difficulty "*for admission data place; the squares are very small and not clear*".

In Aden the war and insecurity affected negatively on the program reporting mechanism; one program manager from Al-Sadaqh hospital said that "*there is a regularity in reporting except in the period of the war*", another program manager from Hashed medical complex in Al-

Mansurah add "*regarding the fixed centres; the reporting is regular per month and being sent from the centre to the governorate program office through the district coordinator, reports of volunteers is weak and after the war were interrupted*" while in Hadramout a doctor from Al-sheher hospital gave another reasons for delay of reporting "*yes, irregularity in sending the reports through administration due to no car to sent our reports from Alsheher to Mukalla (capital of Hadramout) also there is another reason of the personal problems of the program manager , she delivered a twin, her health condition affect her activity and follow-up the program activities*"

5.2 irregularity in supplies of the therapeutic food: shortage of therapeutic food affect markedly on the program effectiveness because OTP when established as a community component of the SAM program aimed to increase accessibility of SAM children to nutritional services through providing the therapeutic foods which is an important for cure of the SAM child and improve their weight; lack, shortage of this materials lead not only to collapse of the program but also increase defaulter, deaths and consequently community trust on the program. from Al-Sheher hospital in Hadramout summarize this condition, he said "*it was frequently occurred the problem of unavailability of the therapeutic food, it may no therapeutic food for months especially in this year 2015, sometimes we received these materials with near date of expiry!*". lack of the therapeutic food also affect on the reporting mechanism, another female doctor from Al-Sheher hospital concluded that "*previously, we send reports on monthly basis to governorate centre and kept a copy for facility archive, now due to unavailability of the therapeutic food; we did not sent the monthly reports bur we just list all the detected cases in the hospital registry*" another reason behind unavailability of the therapeutic food is the capacity to store more therapeutic foods in the health facilities;

this issue was addressed by one program manager from Hashed medical complex in Al-Mansurah in Aden "*Yes, there was no store to kept registries, and no qualified store to kept the therapeutic food specific for management of severe malnutrition*"

5.3 lack of supervision and follow-up: supervision is one of the core functions of the SAM program management; it seems to be either irregular or not conducted at all; one doctor from Seuyon hospital in Hadramout said that "*no field visits from the program manager or the coordinator; and in some centres have no OTP*" while another doctor from the medical complex in Al-Mansurah in Aden summarized the program manger attitude "*no supervision or follow-up in regular forms even once per month, only at the end of the month the program manager follow the monthly report and sometimes he/she follow and register results by telephone*"

5.4 poor communication within the program: Although communication tools are available like telephone, fax and in some facilities net is also easily accessible but still communication between managers and staff at operational level may be not proper. more obvious the direct communication through regular meeting was lacked. One doctor from Seuyon hospital in Hadramout said that "*no semester meeting and even mid-year meeting is not exist and nor regular newsletter*".

5.5 Lack of staff motivation: the only motivation mechanism provided to the staff is the training, still some staff complaint the need of training but actually they looking for financial incentive as form of motivation. most of staff interviewed reported lack of incentives, one program manager from Hashed medical complex in Al-Mansurah (Aden) clarified this point; "*yes; incentive problems were not managed as it should be or according to promises that were given to the staff*"

5.6 Poor coverage of TFC: according to the SAM management guideline; critical cases must be treated in in-patient in hospital; this in-patient department specific for management of SAM children is so called the therapeutic feeding centres (TFC). Staff facing challenges when need to transfer critical cases to TCF to hospital where TCF was not yet established in these hospitals. One program manager from Al-Buriqah district in Aden concluded that "*the centre did not provide in-patient services only it provide treatment services through OTP with weekly follow-up in the centre and daily in the community, of course the complicated cases make to us challenges and the relatives refused transfer to the central hospital*" while one doctor from Seuyon general hospital in Hadramout said that "*no place for inpatient services of SAM children (TFC) and this is the main barriers in Seuyon hospital*"

5.7 poor investment on community volunteers: the SAM program invested many opportunities in training community volunteers especially females in remote areas. The impact of this community training was not well clear in enhancing case detection and reporting. One doctor from Aden general hospital confirmed this condition, he said "*there is a problem for follow-up in the community from volunteers , this component was not effective*"

5.8 irregular outreach activities: A lot of SAM children are from remote areas where inaccessibility to health services complicate their conditions or may be missed in detection and reporting and underestimate the problem. reaching to hard to reach people is one of the community tasks of the SAM program. most of the interviewed participants addressed this issue. One doctor from the University hospital in Hadramout complaint that "*there was limited field visits and may be once per a year*" ,

5.9 private sector was not engaged in SAM program activities: some of the interviewed doctors especially paediatricians complaint no

communication with the SAM program managers and being engaged their private clinics in the system saw frequently SAM children in their private clinics; providing them measurement scales, registry, guideline and being engaged in training may enhance program effectiveness. One paediatrician from Gail Bawazeer hospital in Hadramout said that "*there was no reporting forms in private clinics*"

The available opportunities in the SAM program:

The existing of the SAM program and the available infrastructure in the health facilities providing the excellent opportunity on which strengthening the program based on. Moreover availability of trained staff and doctors. Other opportunities were: availability of telephone, fax in some health facilities and the availability of social communication networks. The positive community opportunity is that mothers respond positively to program recommendations

Suggestions to improve the SAM program:

Many suggestions were formulated by the participants, some were classic like expansion of training, provide guidelines and reporting forms and other are innovative like nutritional education, community volunteer engagement and outreach activities, use of social communication networks for reporting and feedback, scaling-up in-patient (TFC) departments to all hospitals and developing private sector partnership.

Nutritional education: education of mothers about the problem of malnutrition, available tools of diagnosis and treatment and can be preventable is an important concern in reducing mortality due to malnutrition. This is absolutely a function of the program in coordination with other health sectors, and being this activity a community based and implemented by female volunteers is expected to be successful. One program manager from Al-Buriqah district from Aden suggested that "*first; through the community and include raise awareness about*

symptoms of acute severe malnutrition and its complications, second; through cadres and health facilities by building the capacity for efficiency and counselling" while another doctor in Al-Sheher hospital in Hadramout emphasized the role of the female volunteers and doctors "strengthening the role of volunteers, training for cadres" while another doctor from the University hospital in Haramout suggested that "community survey in houses and providing OTP in weekly basis" while one health worker from Seuyon hospital in Hadramout addresses another tools for education "message release through radio, magazines, and programs to raise the awareness of people and especially mothers"

Role of female community volunteers: one program manager from Taribah health centre suggested that *"providing female community volunteers to visit houses"* while another program manager from Ghail Bawazeer hospital in Hadramout concluded that *"establishing a bridge of communication with the female volunteers that are already spread in villages , rural areas and motivating them through social media networks and media to give a complete image about the program"*

Outreach nutritional services to reach SAM children in remote areas: this is an important suggestion was reported by a lot of participants to not miss any SAM child especially in remote areas where poor families living. One program manager from Al-Mansurah, Aden recommend that *"detection of cases of severe malnutrition in kindergarten and remote areas"* While another health worker from Al-Dees hospital in Hadramout suggested that *"visits to the remote areas to those who unable to reach to OTP clinic"* while others linked the nutritional education with outreach activities to be effective *"visits all the rural health centres and do lectures for mothers"* one doctor from Al-Sheher hospital in Hadramout said, while another program manager from Ibn Khaldon hospital in Lahj add *"field outreach activities to raise the*

awareness about nutrition". one health worker from Al-Sheher health centre in Hadramout suggested this in more details *"implementing outreach activities in remote rural areas and beddo settlements who unable to access to OTP clinic".*

Use of social media networks to enhance reporting and feedback: one of the innovative methods suggested to enhance reporting and feedback are use of social media tools like what's-up, facebook and internet, *"use of social media provide best opportunities for reporting"* one female doctor from Hashed medical complex in Al-Mansurah (Aden) said, while another doctor from Seuyon hospital add *"making groups through social media programs "What's up, telegram" between health workers and governorate coordinator with daily and weekly reporting"* and one program manager from Al-Qaren health centre in Hadramout suggested that *" designing a special program for reporting through What's-up"*

Paediatricians and private sector engagement: Paediatricians either in private sector or at the public hospital are an important staff for case detection, management and education; they may feel they are ignored or the communication with program staff is not proper, it was recommended by some paediatricians to be involved and it was also recommended by program managers and health workers to be part of the program. One female paediatrician said that *" engage doctors in the program especially paediatricians and give them opportunity and discussed with them the protocol of child nutrition that are available in references"* and she suggested that *"they should communicate with paediatricians"*

Scaling-up TFC services: A lot of participants claimed that care takers refused referral to another hospital for in-patient TFC services, so providing this services in all district hospital may be the proper solution, one doctor from Seuyon general hospital in Hadramout suggested that

"establishing TFC department in Seuyon hospital then the other hospitals"

Health administration commitment: This issue was sensitized by some participants while other acknowledged their facility administration. one health worker from Fwah health unit in Hadramout said that " *there is a coordinator but the health office administration in the district didn't take care to the program and clinics in this unit*" while another health worker suggested that " *the health office should take care to the nutrition program and consider it a priority like vaccination program and reproductive health program*" that means it is highly recommended to engage health administrations at all levels in planning and implementation through raise their commitment.

Conclusions from the qualitative study:

The following tables summarized the factors affecting case detection, reporting and feedback from participants perspectives and their suggestions to improve SAM program performance.

Table. 10: Factors affecting Case detection, Reporting and Feedback :

Sub-themes	Category
1. Cadre Capacity	<p>1.1 Poor adherence with the SAM guideline</p> <p>1.2 Shortage of cadres</p> <p>1.3 Doctors were not cooperate to refer cases to OTP</p> <p>1.4 Undergraduates are not exposed to SAM management guideline during their pre-service training</p>
2. Health facility readiness:	<p>2.1: Poor OTP Readiness</p> <p>2.2 poor coordination within the facility</p> <p>2.3: improper administrative readiness</p> <p>2.4 Weak logistic maintenance</p>
3. SAM children related problems:	<p>3.1: Problem of defaulters</p> <p>3.2 child refuse treatment</p> <p>3.3 child have complications or other diseases</p>
4. Care takers perspective	<p>4.1 Mother's role in encouraging her child to take the therapeutic food</p> <p>4.2 The mother and family misbelieves on therapeutic food</p> <p>4.3 Mothers refuse admission/referral of her children to TFC</p> <p>4.4: Mothers refuse admission/referral of her children due to socio-economic reasons</p> <p>4.5 Care taker refuse admission/referral her child due to social reasons</p> <p>4.6 mothers refuse admission/referral due to inaccessibility problems</p> <p>4.7 care takers refuse admission/referral due to long treatment period</p>
5. The program effectiveness	<p>5.1 Reporting related problems</p> <p>5.2 irregularity in supplies of the therapeutic food</p> <p>5.3 lack of supervision and follow-up</p> <p>5.4 poor communication within the program</p> <p>5.5 Lack of staff motivation</p> <p>5.6 Poor coverage of TFC</p> <p>5.7 poor investment on community volunteers</p> <p>5.8 irregular outreach activities</p> <p>5.9 Private sector was not engaged in SAM program activities</p>

Table. 11: The available opportunities and the suggested solutions to improve the SAM program performance

The available opportunities	The suggested solutions
Availability of the SAM program/OTPs	Nutritional education
Availability of physicians	Role of community volunteers
Availability of trained staff	Outreach nutritional services to reach SAM children in remote areas
Availability of telephone and faxes in some health facilities	Use of social media networks to enhance reporting and feedback
Mothers responds positively to SAM program recommendations	Paediatricians and private sector engagement
The availability of social media networks	Scaling-up TFC services
	Health administration commitment

Results and interpretation

PART THREE

REPORT REVIEW

Method: the monthly reports were reviewed for consecutive three months in 2015 from 22 health facilities (five health facilities either reported no cases or reported only raw data). Performance of reporting were assessed in terms of completeness of reports regarding admission data, discharge data and outcome data. Other data extracted are: outcome indicators in terms of cure rate, defaulter rate and death rate.

Findings:

In general only 25% of the monthly reports had complete data regarding admission, discharge and outcome. Most of these reports were partially completed (56.3%) (table.12). The best indicators reported were admission indicators (62%) but outcome indicators were poorly extricated (31.2%).

Regarding data quality; although only 5 reports (22.5%) were good reports but the other 17 reports were of bad quality and consequently outcome indicators cannot be extracted properly. From those of bad reports; it represented as data inconclusive (45.6%) or no cases reported (9%), unable to extract outcome indicators (9%), or no monthly repots (9%). (Table. 16)

Table. 12: Completeness of from monthly reports of 16 facilities in general

Completeness of reports	No of health facility's reports	%
Data were fully completed	4	25%
Data were partially completed	9	56.3%
No data were reported	3	18.8%
Total	16	100%

Table. 13: Completeness of outcome indicators from monthly reports of 16 facilities

Completeness of reports	No of health facility's reports	%
Data were fully completed	5	31.2%
Data were partially completed	7	43.8%
No data were reported	4	25%
Total	16	100%

Table. 14: Completeness of admission indicators from monthly reports of 16 facilities

Completeness of reports	No of health facility's reports	%
Data were fully completed	10	62.4%
Data were partially completed	3	18.8%
No data were reported	3	18.8%
Total	16	100%

Table. 15: Mean percentages of outcome indicators extracted from the monthly reports of 16 health facilities

Outcome indicators	Mean percentage
cure rate	31%
Defaulter rate	58.4%
Death rate	0.6%
None response rate	2.2%

Table 16. Finding from observation the content of 22 reports

Comments	No. of reports	%
good report*	5	22.7%
data was inconclusive**	10	45.6%
no cases	2	9.1%
no data in the third month due to focal person transferred to paediatric department, OTP closed in Aid	1	4.5%
only raw data in registry, no monthly reporting summarizing the data and extracted outcome indicator	2	9.1%
outcome indicators extracted wrongly	2	9%
Total	22	100%

*Good reports mean all data were filled and able to extract outcome indicators

** Inconclusive data means no data were reported in one or two months regarding one or more indicators giving the summarizing data inconclusive characteristic.

Section 5: Overall Conclusions:

In this study, gaps are identified regarding case detection/ management , reporting and feedback among program managers, physicians and health workers of the SAM program in three governorates in Yemen. These gaps are:

1. low coverage of SAM training.
2. poor knowledge of participants regarding SAM management.
3. Unavailability and difficulty of using the guideline in detecting and treating SAM children especially in Physician.
4. Poor physician adherence with SAM management guideline.
5. Huge data and difficulty in understanding the reporting forms.
6. lack of coordination between physicians and health workers lead to missing SAM cases due to no reporting.
7. Feedback is mainly verbal by telephone and be not documented.

in qualitative part of the study when in-depth data were recorded, more details about readiness of health system, cadre capacity, program effectiveness, care-taker perspectives and SAM child problems were addressed. in addition to what are concluded in the quantitative part of the study; participants addressed another issues like: Shortage of cadres, Undergraduates are not exposed to SAM management guideline during their pre-service training. regarding health system readiness: Poor OTP Readiness, poor coordination within the facility and improper administrative readiness. the sick child may refuse the therapeutic food due its taste or because he/she have complications. Care takers or mothers play a critical role in success of the program through her encouraging her child to take the therapeutic food but her misbelieves may be a great challenges and may lead to increasing defaulters. socio - economic condition of families may be determinants for utilization of nutritional services. part of challenges to the improving of SAM program are related to the program itself; this like: irregularity in supplies of the therapeutic food, lack of supervision and follow-up, poor communication within the program, Lack of staff motivation, Poor coverage of TFC, poor investment on community volunteer and irregular outreach activities.

In the third part of the study where quality of reporting data were reviewed, it is clear that poor quality of the reported data including low completeness, inability to extract outcome indicators due to inconclusive data in some monthly reports. the well documented outcome indicators indicate that low cure rate and high defaulters. data about deaths are inconclusive.

Section 6: Strategy for implementation

Implementation Outreach Strategy For Management Of SAM Children

Problem statement from the research findings: A lot of SAM children are from remote areas where inaccessibility to health services complicate their conditions or may be missed in detection and reporting and underestimate the problem. reaching to hard to reach people is one of the community tasks of the SAM program.

Message: not miss any SAM child especially in remote areas where poor families living

Opportunity: Availability of trained community volunteers (females), in rural areas.

“ The nutritional program in Yemen invested a lot of resources in training CWs for education and reporting but not yet applied for scaling-up services to remote areas so they are cost-effective resources to solve the problem of inaccessibility and reduce mortality related to malnutrition.

The resource team:

At Strategic mid-level: SAM program Staff

At Operational level: Community female volunteers

Components of the strategy

- Training community health workers
- Community nutritional screening
- Community case management/referral
- Community nutritional education
- Community reporting

Factors in User organization to be addressed to support the proposed change

- Organization approval: to facilitate the implementation and coordination
- Commitment: for budget allocation
- Communication: with all levels of service delivery
- Coordination with other partners
- Documents for training and evaluation

Resources needed:

Human: supervisors, trainers and community volunteers

Technological: guidelines, report forms, training materials, therapeutic foods, anthropometric measurements, transport

Financial: Budget, logistic and supply mechanism

Time boundary: two year, 2017-2019

Part II: Reporting on the iPIER process

Section 1: how research findings helped inform changes in health policies and programs

Research findings will help inform changes in health policies through the following actions:

1. Dissemination of the findings: through different channels like a) dissemination of the final report to stakeholders in Ministry of public health, nutrition program, academic. b) presentation of the findings in seminars, workshops and or conferences. c) in job and pre-service training
2. Participatory actions between academic researcher (here is Hadramout University College of medicine) and health office & nutrition program to change the research findings into practice.

Section 2: The collaboration between the implementer and the researcher(s)

The researcher here is academic of Hadramout University (principle investigator) and the implementers are staff of the nutrition program, through the research findings the implementers welcome and encourage like this type of research, the positive aspects of this work are that the implementers feel the value and ownership of their work as the first time they talk about their ideas, concerns and expectations. There are no significant negative aspects.

Section 3: The collaboration/support provided by Birzeit ICPH and EMRO

The research team from Hadramout University and MOPH in Yemen (Prof. Abdulla Bin Ghouth as a principle investigator and Dr Salem Yser Meftah as co-investigator) succeed in getting a fund from WHO/EMRO with collaboration of Alliance for Health Policy and Systems Research (AHP SR) and with technical support from institute of community and public health (ICPH) medicine in Berzeit University (Palestine) within the iPIER project about implementation research. The research team attend two workshops in Cairo, these two workshops conducted by WHO/EMRO with technical support from Birzeit ICPH and EMRO. Also the research team participated in the e-meetings and benefit from e-lectures that provide by Birzeit ICPH through Skype or other electronic tools. The negative aspects is the delay in provide payments and also delay in contract release.

Section 4: Challenges have we experienced during this period

1. Security problems
2. Limited health workers in the nutrition feeding programs less than the planned in the project

References:

1. Ashworth A, Khanum S, Jackson A, Claire Schofield C. Guidelines for the inpatient treatment of severely malnourished. World Health Organization. 2003.
2. MOPHP, 2008, Guidelines for the Management of the Severely Malnourished in Yemen, Version 1, Oct. 2008 in Collaboration with UNICEF and WHO.
3. Boelaert M, Davis A, Le Lin B, et al. Nutrition guidelines (1st edn).Paris: Médecins Sans Frontières, 1995.
4. Ville de Goyet C, Seaman J, Geijer U. The management of nutritional emergencies in large populations. Geneva: WHO, 1978.
5. World Food Programme (WFP). Food and nutrition handbook. Rome: WFP, 2000.
6. available at: <http://www.emro.who.int/yem/yemen-news/severe-malnutrition-management-sadaqa-hospital.html>