

**Maternal and Child Healthcare Programme Effectiveness
Evaluation (MCHPE): John Taolo Gaetsewe (JTG) District**



**Northern Cape Department of Health in Collaboration with
Office Of the Premier (OTP)
PATH JTG District Office
Statistics South Africa**

March 2015

Draft Report Prepared by:

Principal Investigator

Dr E Worku

MCHPE Study Group

Ms L Mokotso

Ms I Tlhankana

Mr B Mashute

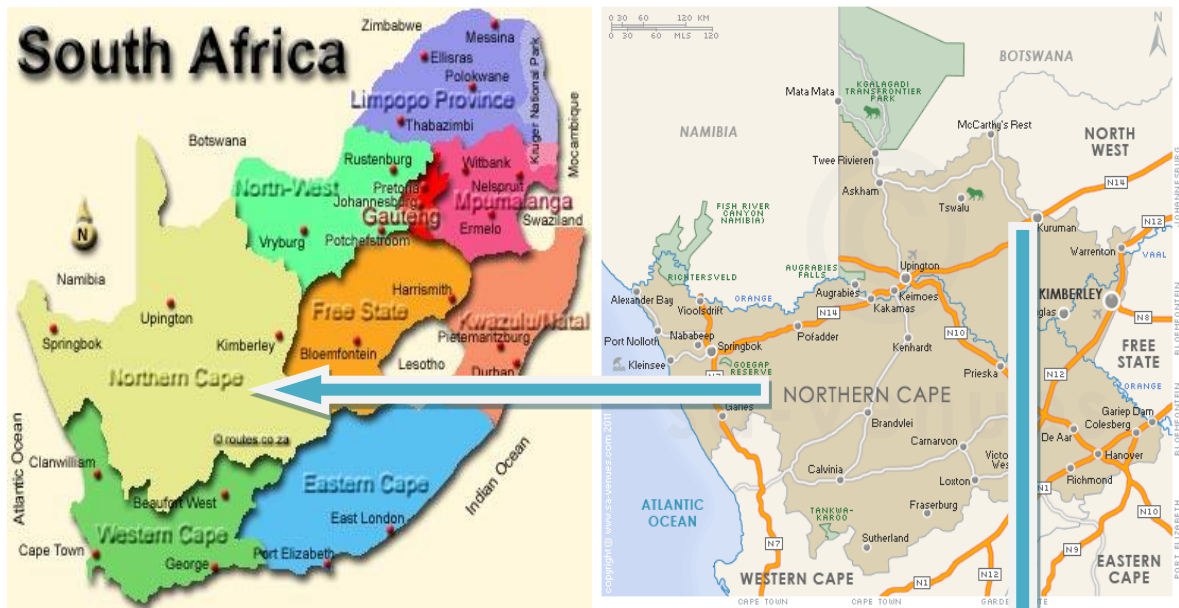
Ms P Matoma

Dr CD Ifabuzor

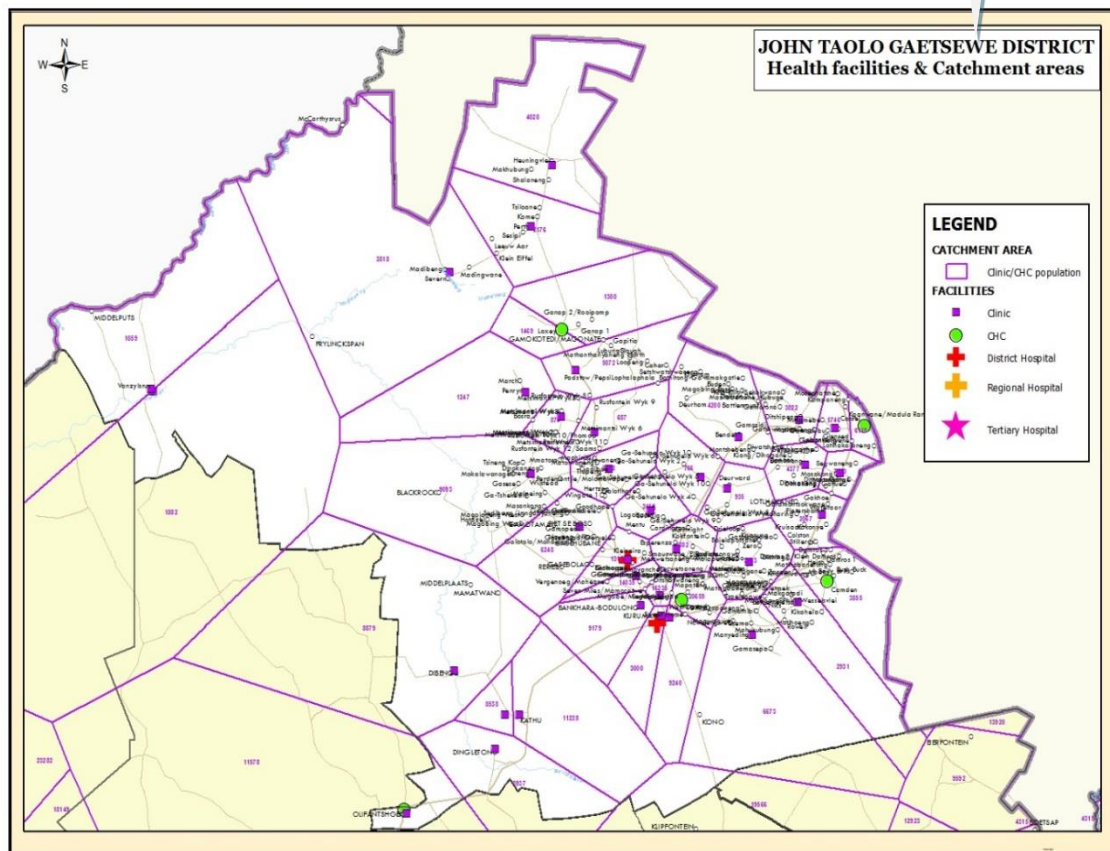
Suggested citation

Worku EB, for MCHPE study group. Maternal and Child Health Programme Effectiveness Evaluation (MCHPE) John Taolo Gaetsewe District, 2015. Northern Cape Department of Health.
Email:eworku@ncpg.gov.za

Map of South Africa, study province and district



Northern Cape Province



John Taolo Gaetsewe District

ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immunization Deficiency Syndrome
ANC	Antenatal Care
ART	Antiretroviral Treatment
CARMMA	Campaign on Accelerating Reduction of Maternal and Mortality in Africa
CHC	Community Health Centre
CHCW	Community Health Care Workers
DCST	District Clinical Specialist Team
DHIS	District Health Information Software
DHS	District Health Services
DHP	District Health Plan
DMT	District Management Team
ENMR	Early Neonatal Mortality Rate
ESMOE	Essential Steps to Managing Obstetric Emergences
HIS	Health Information System
HIV	Human Immunodeficiency Virus
JTG	John Taolo Gaetsewe District
KMC	Kangaroo Mother Care
MCWH	Maternal, Child and Women's Health
MCHPE	Maternal and Child Health Programme Evaluation
MDG	Millennium Development Goals
MTEF	Medium-Term Expenditure Framework
NCCEMD	National Committee on Confidential Enquires into Maternal Deaths
NDOH	National Department of Health
PMTCT	Prevention of Mother to Child Transmission of HIV/AIDS
PHC	Primary Health Care
RTH	Road To Health Booklet
WBC	Ward Based Counsellors
WBOT	Ward-Based Outreach Teams
WHO	World Health Organization

ACKNOWLEDGEMENTS

The study team would like to express its sincere gratitude and acknowledgement to the following individuals and organizations:

- Office of the Premier (OTP) for the technical and financial support (covering data capturing cost).
- PATH organization (JTG) for providing logistical support (including transportation, accommodation and catering) during training of data collectors.
- Ms Phyllis Poloholo for supporting the study by allocating funds from HIV/AIDS grant
- JTG district department of health including DCSTs for their valuable support in supervising the field implementation of the study.
- Ms Barbara Mototo, Mr Holden James, Ms T Nthabelang, and Ms Mando Leburu for overseeing the data collection.
- Ms Y Nowell and Ms A Shenxane for centrally coordinating the logistic facilities for stakeholder meetings.
- All study respondents in JTG who participated in the study.

CONTENTS

ACKNOWLEDGEMENTS	5
1. Executive Summary	8
1.1 Background.....	8
1.2 Key findings of the study	10
1.3 Challenges	14
1.4 Recommendation	18
2. Purpose and Background	23
2.1 South African health policy and strategy	23
2.2 Maternal and child health	24
2.3 District Health Plan.....	25
2.4 Study district	26
2.5 Study framework	27
2.5.1 WHO Health System Building Blocks	27
2.5.2 The Logic Model	29
3. Objective of the Study	30
3.1 Broader objective of the study	30
3.2 Specific objectives of the study.....	30
3.3 Research Questions.....	30
4. Research Design and Research Methodology.....	31
4.1 Study design	31
4.2 Study population and sample size.....	31
4.3 Sampling techniques and sample size for facility based survey	32
4.4 Conceptual framework and study variables	32
4.5 Study procedures.....	34
4.6 Ethical consideration	35
4.7 Limitation of the study.....	36
5 Results of the Study	37
5.1 Socio-economic and demographic characteristics of respondents.....	37
5.2 Available maternal and child healthcare services in the JTG district	39
5.3 Services utilization by mothers and children	46
5.4 Quality of services provided	50
5.5 Health facilities and their distribution	52
5.6 Health workforce availability and their distribution.....	53
5.7 District Health Financing	54
5.8 Client's satisfaction on services	55
5.9 Health outcomes.....	57
5.10 Focus Group Discussion	57

6	Discussion	62
6.1	Population (structural) level factors	62
6.2	Individual level factors.....	75
7.	Conclusion and Recommendations on the Way Forward	78
7.1	Conclusion	78
7.2	The way forward	78
8.	References	84

List of Tables

Table 1:	Health system building blocks and indicator for progress measurement	28
Table 2:	Conceptual framework used for guiding the study and variables selection.....	33
Table 3:	Socio-economic and demographic characteristics of the study respondents	38
Table 4:	List of services provided under MCH programme and expected outcomes in the JTG district	41
Table 5:	MCH services uptake and health outcomes for the period 01January 2014 to 30 September 2014	48
Table 6:	Health facility distribution per sub-district and health area in JTG	53
Table 7:	Healthcare workers in JTG district	54
Table 8:	Growth in district budget for 2012/13-2014/15 financial years per capita allocation	55
Table 9:	District actual expenditure trend for past five years	55
Table 10:	Health professionals per 10,000 for the public sectors	65
Table 11:	Distribution of healthcare workers within the province per district	66
Table 12:	Uptake and number of graduate from provincial nursing college	68
Table 13:	Growth in district budget for 2012/13-2014/15 financial years per capita allocation	72

List of Figures

Figure 1:	WHO Health Systems Framework	28
Figure 2:	Simple Logic Model for programme evaluation	29
Figure 3:	Training of data collectors on research questionnaires.....	34
Figure 4:	Pregnant mothers waiting for their ANC visit at a PHC facility	46
Figure 5:	Taking a blood sample for HIV test from a pregnant mother during ANC visit	50
Figure 6:	ANC follow-up visit for a pregnant woman.....	51
Figure 7:	Staff attitude and client satisfaction	56
Figure 8:	Community health care workers and training facilitators.....	67

1. Executive Summary

1.1 Background

South Africa has made significant progress in improving access to healthcare services over the last two decades. Despite the encouraging progress, there still exists a wide disparity in maternal and child mortality rates across the population. The South African National Department of Health (NDOH) has set a number of goals to reduce the inequity in access to good quality health care service. The 10 point plan was issued to highlight priority areas and expected improvements in health outcome indicators that are essential for providing equitable access to good quality health service. The maternal mortality ratio is one of the outcome indicators used for tracking progress towards the Government's 10 point plan.

The National initiative has put the health of women and children at the heart of its District Health Services (DHS) plan. As a priority programme, comprehensive maternal and child health services are provided in all primary health care facilities across the nine provinces of South Africa. Major causes of maternal and child mortalities can be prevented with improved access to good quality health care service, implementation of policies and standard procedures as expected. In spite of this, reports indicate maternal and child mortality rates in John Taolo Gaetsewe (JTG) district are unacceptably high compared to the national averages, yet the root causes of the challenges remain inconclusive.

The existing high maternal mortality rate in the JTG district indicates the need to evaluate the effectiveness of health care delivery mechanism within the district with particular questions as to which factors contributed towards programme utilization from clients? Programme effects on the reduction of maternal and child mortalities as well as does the maternal and child health programme implemented, correspond with elements as indicted in its policy document? It is against this background that the Provincial Research and Development Unit together with its stakeholders conducted a maternal and child health programme effectiveness evaluation in JTG district. The overall aim of the study was to identify the root causes of challenges in achieving low maternal mortality ratios despite the efforts exerted by government in implementing priority maternal and child health programme interventions.

The World Health Organization (WHO), health system building blocks and the logic model have been used as a framework to guide the development of study instruments. These building blocks include adequate, well-trained and caring human resources for health, health care financing, availability of infrastructure, equipment and information technology, capable leadership or governance to implement policies in effective and efficient ways, as well as the availability of drug and medicine products.

We collected information on indicators that are linked to important aspects of good quality health care services by assessing the effectiveness of the maternal and child health care programme. This includes: utilization of services, accessibility of services, quality of services provided, availability of systems to provide the required services, client's service satisfaction level, allocated budgets, health outcomes, client's socioeconomic and demographic data.

Maternal and child health care programme in JTG District has shown notable successes in areas such as: increased reproductive health service utilization rates, efficient healthcare workers support to clients, increased facility deliveries, increased HIV/AIDS detection and ARV treatment initiation, providing comprehensive counselling, more PMTCT success outcomes, improved in facility maternal mortality rates and improved client satisfaction. Despite the success stories and the government PHC policies, with an integrated community approach, strategies and support programme, maternal and child health outcomes in the District have remained relatively high compared to other districts in the province as well as the National averages. Outcomes are still adversely affected by many challenges related to the health system supply side, socioeconomic nature of the district, and client related problems. Addressing these challenges is critical to ensure that maternal and child health outcomes improve in the district.

This report presents an overview of the key achievements/findings and challenges in the delivery of maternal and child health services in the public health sector in JTG district. It also provides insight into further improvements in the maternal and child health services based on the technical analysis undertaken over a period of one year which commenced in April 2014.

1.2 Key findings of the study

1. **Maternal Mortality:** The JTG's district MMR showed substantial fluctuation in the last five years. Had maternal and child health programmes been implemented effectively, the trend would show decreasing patterns in MMR over the past decade. The district still has a long way to go to overturn the high MMR. According to the National Committee on Confidential Enquires into Maternal Deaths (NCCEMD) report, in 2009/10 the MMR was 129.9 per 100,000 live births. In 2010/11 the MMR drastically increased to 435.3 per 100,000 live births. In 2011/12 the MMR fell down to 191 per 100,000 live births. In 2012/13 the MMR increased to 260.5 per 100,000 live births. The most recent confidential enquiry report by the committee for 2013/14 has reported that the high maternal mortality rate significantly slowed down to 93.2 per 100,000 live births. The record review that we conducted for the period 01 January 2014 to 30 September 2014, the MMR was 123.18 per 100,000 live births in JTG district. Although the NCCEMD is a well-established system with strong regulatory framework, these year-to-year fluctuations must be treated with caution.
2. **Socio-demographic and economic background of participants:** out of 272 mother-infant pairs interviewed at 6 weeks immunization visits, 18.2% were teenagers (<20 years), 71.96% were single mothers, 68.89% had secondary education, and 66.6% of their total monthly income was less than or equal to one thousand Rand (R1000.00). Close to half (44.69 %) of the mothers reported they had their first baby before the age of 20 years. Out of the 18.2% respondent mothers who were teens in this study, 94%, and 84% of them were unemployed and single mothers respectively. This shows the reproductive health programme has received inadequate attention among teenagers to produce the desired outcome and the socioeconomic challenge teenage mothers face in addition to other known risks of teenage pregnancy, including adverse infant outcome, academic failure and social discrimination.
3. **Antenatal Care Visit:** The proportion of pregnant women who booked for an early ANC first visit before 12 weeks of pregnancy was 26%. The mean gestational age of respondents at their first antenatal visit was 26.37. Late ANC booking was most common (66%) among the teenagers (<20 years). One fourth (25.6%) of pregnant mothers booked their first ANC care after 20 weeks. This suggests there still be done

to change pregnant mothers' behaviour as well encouragement practices to accept the WHO and the national guideline recommended for early ANC visits. Focus group discussion participants indicated the distance to health facilities, lack of knowledge, cultural beliefs, and poor quality service at health facility level as major contributing factors for late ANC booking.

4. **Facility delivery:** The majority (92.2%) of deliveries occurred in health facilities, primarily in the public sector (84.64%), of which 14.98 % mothers had clinic or CHC delivery, and 69.6% had hospital delivery. With regards to the type of delivery, 79% was normal vaginal delivery, and 19.48% was Caesarean section. This shows pregnant mothers have access to health delivery services and choose a facility delivery. This was made possible through effective client-provider interaction by appropriate counselling. While the observed clients' behaviour for assisted delivery in a health facility is encouraging, service provider's capacity to adequately and efficiently meet the demand with the current staff shortages in PHC facilities is questionable.
5. **HIV Prevalence:** The maternal reported HIV prevalence rate was 17.6%. The HIV prevalence is slightly lower (or remained steady) compared to the 2012 HIV prevalence rate (17.8%) reported for JTG in the National Antenatal Survey. However, in this study, we anticipate a potential under-reporting of HIV positive status due to social desirability bias. The HIV challenge has not been significantly reduced in spite of efforts on safe sex education, condom distribution, test for HIV status and counselling, ARV treatment and other available interventions. The Road to Health booklet was crosschecked to validate maternal self-reported HIV positive status, however, the HIV status section of the RtH booklet was incomplete in 10.24% of mothers. In focus group discussion it was reported that some of the mothers had torn out the HIV status page from the RtH booklet. If self-reported HIV status is under reported, then the prevalence of HIV/AIDS among pregnant mothers in JTG may have increased.
6. **Waiting time and client satisfaction:** The median waiting time was 1 hour and 22 minutes (with interquartile range, 30 minutes to 4 hours). Longer waiting time has a negative effect on the utilization of services as planned and achieving the expected outcomes of interventions. Despite this, 49.43% of mothers displayed high levels of satisfaction with maternal and child health services, including the waiting time, clinical

examination, and the attitudes of health personnel. However, in the focus group discussion, supply side constraints, long waiting time and long distances to health facilities were raised as major concerns. Proper functioning of a health facility and high-quality provider performance is required in order to reduce long waiting times.

7. **Funding:** Government funding and the annual rate of funding increase for health care services in JTG district were inadequate. There is no evidence-based allocation of resources. The historical ways of allocation of health resources between facilities was also inequitable across facilities with the majority of resources allocated to town areas compared to rural areas. As a result, there is disparity in access to health services between urban and rural populations. Efforts to provide good quality healthcare services at PHC facilities have been jeopardized due to a lack of resources as well as inefficiencies in the use of available resources. These resources include human resources for health, financial resources, infrastructure, information management and exchange during referrals, planning and monitoring. Districts are mainly funded from three funding sources. The majority of funding comes from Government equitable share, which contributed 74.1% in 2012/13; 69.6% in 2013/14; and 69.2% in 2014/15. The second funding source is conditional grant which accounted for 17.5%, 21.3%; and 22.4% in 2012/13; 2013/14 and 2014/15 financial years respectively. The remaining comprises of earmarked funds. The total health budget for JTG district in 2014 was Rand 253,548, 000, which is equal to R1249 per capita. Compared to budget allocated for other districts in the province in the same year, the budget allocated for JTG in 2014 was the lowest in the province. This has a serious effect on the implementation of maternal and child policies, norms and standards as planned and achievement of the desired outcomes.
8. **Access to health care services:** According to facility service review reports, none of the CHC facilities in the district have a full-time doctor, and are not providing 24 hours emergency service. More than a third of the clinics are managed and operated by one health professional due to a shortage of health care workers. In this study, one out of five (21.9%) pregnant women reported traveling to another facility for delivery because the facility they first visited was closed. Lack of human resources to implement the maternal and child health programmes has been a stumbling block for the delivery of the effective and equitable maternal and child health care services in the district.

9. **Referrals:** Review of district hospital outpatient records show that conditions that could be managed at PHC level are being managed by district hospitals. While the PHC referral policy is important and PHC facilities should act as a buffer to specialist health services in the district hospital, protecting the patient from unnecessary medical treatment and limiting access to high-cost medical services won't subside until there is a fundamental change in the manner in which healthcare is delivered. This includes adequate staff, the right staff mix, equipment and provision of comprehensive services at all PHC facilities, including 24 hours service for emergency cases. There is a need to educate clients regarding their trust and attitude in seeking hospital based health care services despite the fact that many of their healthcare needs can be addressed in the pre-hospital health care facilities.
10. **Emergency Medical Services and planned patient transport.** Given the health facilities condition, and locations as well as the geographical vastness of the district, lack of dedicated inter-facility patient transport systems (obstetric ambulances and EMS transport system) is detrimental to rural communities (as reported in the focus group discussion) in accessing the necessary care timeously in a cost-effective way. This suggests there is a need to develop district based EMS, particularly for those in rural and inaccessible areas.
11. **Coordinator for MCH activities.** There is no MCH coordinator in JTG district. This has a negative effect on the development and implementation of programmes related to appropriate interventions.
12. **Human Resources for Health.** Adequate supply in number and a professional mix of human resources for health are critical for the transformation of the health system to deliver good quality health care services. As of November 2014, John Taolo Gaetsewe district had 789 healthcare workers distributed throughout the district. Of which 379 (47.7%) are accounted for by health professionals, while the larger part 410 (52.3%) are support staff. The district health system, like many other districts in the province is a nurse based system. Nurses are the largest workforce within the district, accounting for 339 (89%) of all health professionals in the district. There are 12 doctors, 2 specialist doctors, 3 pharmacists, 3 dentists, 188 professional nurses, 35 staff nurses, and 120 assistance nurses working in the district. One out of three clinics are operated

by only one health professional. None of the CHCs have a full time doctor. This suggests that the health delivery strategy in human resources underprivileged areas should use a task shifting approach as one method of strengthening and expanding health care services to the communities.

1.3 Challenges

1. **Maternal mortality.** The fluctuation in MMR could partly be due to data quality and reporting problems. Therefore, the data collection and management system of the district needs to be strengthened. The result from this study shows for the period of 01 January 2014 to 30 September 2014, the MMR was 123.18 per 100,000 live births and it seems that there may be an increase in in-facility maternal mortality, the slowdown trend may be reversed for 2014/15.
2. **Disparities in access to good quality health care:** In recent years a number of improvements have been made to increase access to health care services. The number of health facilities in remote and rural areas has been increased, and maternal and child health services are provided free of charge. Despite these improvements, inequity in the distribution of facilities, and non-availability of services (due to shortage of healthcare workers) has been hindering effective services utilization. The two district hospitals in JTG are situated in one town area (Ga-Segonyana), 17 km apart from each other. All CHCs that refer patients to these hospitals are located on average 80 kms from the hospitals. A third of the health facilities in rural areas are managed and operated by only one health professional. Not all PHC facilities work according to the standard norms in their size and are not providing best possible health care closest to the client's home with 24 hours care services. Availability of good quality care at accessible distances along with sufficient healthcare workers will have a crucial impact on the maternal and child health outcomes, and also can contribute to create client's confidence in public health facilities.
3. **Low level of socioeconomic development:** Many factors outside the health sector affect the health of individuals and communities. These factors include the living

environment, the state of residence, level of income, education level, type of employment, relationships with friends and transport. These factors have a considerable impact on health and outcomes of health programmes, either directly or indirectly affecting access and use of health care services. Low socioeconomic conditions correlates with poor health status. In our study, for 66.6% respondent mothers, the total monthly income was less than or equal to one thousand Rand (R1000.00). Close to half (44.69 %) of the mothers reported they had their first baby before the age of 20 years. 94% teens were unemployed. Most of the respondents had secondary education 68.89%. In focus group discussion, poor road condition, and the cost of travel to a facility was indicated as one of the barrier factors for accessing healthcare services.

4. **Late ANC booking.** Achieving a high early ANC booking rate has been a big challenge in JTG district. According to WHO all pregnant women should have at least four antenatal care (ANC) visits, as a minimum, and be spaced at regular intervals throughout the pregnancy. In this study most (74%) pregnant women booked an ANC visit after 12 weeks. In the focus group discussion we were informed that most mothers know the benefit of early ANC booking, however due to cultural beliefs they prefer to delay the ANC visit until the pregnancy is physically visible. Community based health education programmes are urgently required to change this harmful cultural belief.
5. **Teenage pregnancies.** Even though the teen pregnancy rate has been on the decline in recent years, more than 18% respondent mothers were teens in this study. The fact that 94% of them are unemployed, and 84% are single mothers indicates teen parents have greater social problems. Teenage pregnancy is regarded as a high risk pregnancy, and hinder teen's ability to grow and develop to their full potential. Studies indicate teenage pregnancy could lead to depression, alcohol or tobacco use, unprotected sex that can jeopardize not only their health, but also their children's. Remedial steps to better protect young girls from risk behaviour is critical.
6. **The District Health Information Software (DHIS).** The quality, accuracy and timely use and communication of information, is poor. Contradicting information is reported by the facility and the district on crucial indicators. As health information data is vital for planning, monitoring and evaluation of the effects of intervention, adequate attention needs to be given to the district information system (software). Electronic

record keeping in all facilities, continuous quality assessment and timeously reporting of data could improve these challenges.

7. **Inadequate Funding:** How health systems are financed, largely determines whether people can obtain necessary health care services. The available resources that are devoted to health and the way they are used has a direct effect on both the care society can receive and its quality. The economic classification of funds for the 2014 financial year indicate 53.5%, 38.5% and 8% was spent on compensation for employees, for goods and services, and for other services respectively. The proportion of total district expenditure on district hospitals was 53.6%, higher than the provincial average, this could be associated with the vastness of the district. The proportion spent on Primary Health Care (PHC) was 24.6 %, while on clinics 12.7% was spent. The proportion of the health services district budget spent on district management was 7.1%. If there are not adequate provisions ensuring a basic level of health coverage, some people may not have access to good quality care. The district budget is well below the required level to achieve its policy mandates and impact sustainably on the health of the community it cares for. There is no evidence-based allocation of resources. Government funding should be sufficient, predictable and long-term. Resource allocation should be evidence-based so that the district can determine where and how much of the allocated resources reach each facility and programme intervention.
8. **Cost-effective use of hospitals and primary health care services.** Not all referrals were based on the PHC Re-engineering principles. Health problems that should be addressed at primary health care level have been managed at hospital level, leading to additional work load on hospital staff. Effective referral systems should be established at all levels of healthcare to ensure that clients receive the best possible care in a cost-effective way.
9. **Dedicated Emergency Medical Services.** Given the conditions of health facilities, and their locations as well as the geographical vastness of the district, lack of dedicated inter-facility patient transport system, obstetric ambulances and EMS transport systems is detrimental to rural communities preventing access to the necessary care timeously in a cost-effective way. Capacitating EMS for transporting patients who are not able to transport themselves, providing out-of-hospital acute medical care to those in need of

urgent medical care at the next higher level of care (or where service is available horizontally), while providing preliminary medical care at the scene and during transport, is critical.

10. **Coordinator for Maternal and Child Health (MCH) activities.** There is no dedicated MCH coordinator in the JTG district. A MCH coordinator should be assigned and the coordinator should be responsible for the district maternal and child health activities, including working closely with the DCSTs, health area managers, facilities and different stakeholders including Government sectors to prioritize activities and meet deadlines. This critical post is vacant and there is no dedicated person to provide direction and support in maternal and child health programmes.
11. **Accommodation for rural facility health care workers.** Poor working and living conditions of healthcare workers, particularly in rural facilities have been negatively impacting on health facilities operating hours. The need for safe accommodation was raised as a key concern by healthcare workers in rural facilities. Addressing this problem would encourage health workers to extend their stay at rural health care facilities and improve the operational hours of facilities. Currently, because of lack of accommodation, health care workers daily travel to towns from where they live. Meeting these basic needs will encourage retention of health care workers in rural areas.
12. **Human Resources for Health.** Without adequate and quality healthcare workers, it is difficult to transform the health system and produce the required health outcomes. The district faces several challenges related to a healthcare workforce including lack of adequate human resources, poor strategies to get the right health workers, in the right place, with the right skills mix to work competently. Equitable distribution of health workers within rural and urban public facilities and staff retention strategy in rural facilities still remains a significant challenge. In addition to this, with the current staff establishment more than half the staff are non-health professionals. There is a serious shortage of specialist doctors, doctors, nurses, midwives, and pharmacists which suggests the need for urgent attention in this area. This is critical as most of the other challenges in the district such as: waiting time, effective referrals, client satisfaction,

volume and quality of services available or rendered at facilities are directly linked to the availability and quality of human resources for health in the district.

13. **Ward based outreach teams (WBOT).** In districts, like JTG, that experience serious staff shortage, training village health care workers to perform tasks such as vaccines, community mobilization, education on ANC and prenatal care, and care for chronic diseases like AIDS etc is a good strategy to curb the health professionals shortage gap. Training and paying village health workers also creates job opportunities for the poor. However, their challenges such as working conditions, large areas to cover, inadequate and non-timeous salary payment, poor training and supervision, need to be addressed.

1.4 Recommendation

1. **Maternal and child health.** Government policies, guidelines and recommendations on maternal and child health should be implemented effectively.
 - Policies and standard procedures should be available in all facilities and to health care workers. Provision of training opportunity on new strategies and best practices to all staff and stakeholders is critical in order to have a shared vision in the delivery of maternal and child health services.
 - DCST must work closely with the district management team and facility managers to ensure the adherence of policies and procedures, with a particular emphasis to rural and underserved areas.
 - The full Primary Health Care Re-engineering programme with the three streams: District Clinical Specialist Team, Ward based PHC outreach teams, and a school health programme must be established.
2. **Disparities in access to good quality health care.** There should be an effort to promote equity in maternal and child health services through providing good quality maternal and child services that are available at a reasonable distance.
 - Maternal and child health care programmes in both urban and rural facilities should include key interventions to be delivered by district health services.
 - All facilities should communicate the type of services that are available to clients and their working hours.

- Transport should not be a barrier to access these services.
3. **Increasing health facilities.** Disparities in health resources allocation and health facilities distribution exist between health areas (urban and rural). Gamagara and Joe Morolong health areas meet the norm as far as the population per PHC facility is concerned. Ga-Segonyana health area needs more PHC facilities to serve the communities.
 4. **Transport and quality of services for attending ANC care.** Both distance to a facility, and level of quality of services at the closest ANC facility received are important determinates of ANC visits. There is a need to improve both.
 - Transport should be provided for women facing difficulties in attending antenatal care appointments and crucial interventions.
 - Emergency Medical Service (EMS) vehicles should be stationed at easily accessible distances. Certain misconducts by drivers need to be identified and avoided through close supervision.
 5. **Effective collaboration with other sectors:** A multitude of different social, economic and cultural factors determine an individual's health.
 - The Department of health cannot be solely responsible for improving the health of the population. There is a need for effective collaboration with other social and economic sectors, such as housing, employment, road and transport, welfare, education, sewerage and environment etc which have a major impact on promoting or hindering population health.
 6. **Early ANC care.** Most pregnant women access ANC care late although they know the benefits of early ANC care for pregnant women to attain and maintain a state of good health throughout pregnancy and delivery.
 - Health education and making good quality services available to clients will help in reversing the trends of late ANC care booking.

- 7. Effort should be made to reduce teenage pregnancies.** Teenagers are more likely to experience maternal illness, miscarriage, stillbirth, and poor delivery outcomes compared to women who delay childbearing.
- Effective promotion of sex education that is balanced and realistic is important to encourage students to postpone sex until they are older.
 - Promote safer-sex practices, increased make use of contraception.
 - Youth and adolescent programmes at school are critical.
- 8. Health data management and reporting systems.** The quality, accuracy and timely use and communication of information is poor. Contradicting information is reported from the facility and the district on crucial indicators.
- High-resource initiatives, such as investments in electronic record keeping systems, both in facilities as well as in district health services could improve the data challenge.
 - Better monitoring and evaluation is needed to ensure that data collected is of sufficient quality for meaningful interpretation, planning and assessing of progress
- 9. Evidence-based resources allocation.** While maternal and child health services utilization in JTG has been continuously improving, resources are lagging behind to adequately address the increased demand for health care. Given its geographical vastness and rural nature of the district, the budget allocation for the district should increase. Unit costing of services will create an opportunity for district health system managers, facility managers, and stakeholders to accelerate community health improvement through evidence-based planning, budgeting and prioritising activities.
- Decentralisation of the healthcare responsibility to districts should be accompanied with adequate district budgets.
 - Districts are required to set priorities of interventions and allocate resources within the constraint of limited funding. Unit-costing of services assist decision makers to make explicit rational decisions and not to rely on historical or political resource allocation processes.
 - Effective monitoring of the intervention/programme implementations to improve health outcomes.

- The District health services delivery plan needs to be developed through stakeholder's consultation and progress reports should be provided and discussed with stakeholders. Community involvement in the delivery of health services such as planning and monitoring of progress will make them responsible for the management of all community health services in their respective municipalities.

10. Integration and referral systems. In all PHC facilities there is a need to develop strategies that improve effective referral systems, including communicating patient's information for continuity of care.

- This needs dedicated patient transport systems (EMS, Obstetric ambulances, and inter facility transport systems).
- Effective communication on patient's information between facilities for continuity of care. Electronic information technology is vital for the delivery of health care services.
- Better information technology systems and infrastructure would lead to better health care and health outcomes.

11. MCH Coordinator. The department should appoint a dedicated Maternal and child health programme coordinator in JTG district. The coordinator will be responsible and accountable for maternal and child health services.

- Funds must be available for the maternal and child health coordinator post.

12. Human Resources for Health. The World Health Organization's six building blocks of a health system, identified a well performing health workforce being a key factor for delivery of good quality, effective and efficient health care services. There is also a growing recognition that to address the human resources challenge for health, development and training strategies must be comprehensive.

- The district must plan a reform initiative to equitably allocate the existing health care workers in order to provide good quality and equitable healthcare services delivery and to meet the health needs of the population.

- A well-trained, highly skilled and competent health workforce is critical to provide good quality health services for all and address many of the poor health outcomes in the JTG district.
- Education and training of health personnel is a crucial element.
- Planning and management of human resources must receive appropriate attention. It must be accompanied by adequate financial and non-financial resources for the appointment and retention of staff.

13. Improving WBOT working conditions. In resource constrained settings, one response to a shortage of doctors and other highly trained health care professionals is task shifting from doctors to less trained health care workers such as nurses and community health care workers. The Community Based Outreach Teams (CBOT) in an effort to alleviate the health professional shortage, could create strong relationship with mothers and children. CBOT support the home visits, collaborations with schools or other agencies, and the delivery of health services in their community and facilities. Their current challenges which include:

- The salary level, one thousand nine hundred Rand (R1, 900) is not market related. There is a need to make some adjustment towards a living wage.
- The annual leave which is only 12 days needs to be revised.
- Integrating them into the system, including provision of adequate training, and improving their working conditions is essential.

14. Improvement in the health system building block. To bring functional and operational efficiency in the delivery of health service, the following are required: optimizing staffing role, managing the supply chain efficiently, good governance, use of information, and infrastructure.

- There is a need to hire health professionals appropriate to the size and skill mix needs of facilities to address the staff shortage, workload, high turnover and retention of staff. For a long-term human resource development plan during health professional training, recruitment process priority should be given to trainees from rural areas of the district.

2. Purpose and Background

2.1 South African health policy and strategy

South African health policy states that every citizen has the right to achieve optimal health¹. To ensure this, in the last two decades, government has made great efforts in developing a range of new legislations, implementing health sector reform policies and strengthening the health systems along with addressing the social determinants of health aimed to provide equitable and more accessible good quality health services for everyone. Cognisant with certain vulnerable groups in the population, and those who have special health needs, priority programmatic activities have been also designed to move towards attaining equity in health and the delivery of health care services. In South Africa, maternal and child health programme is a priority programme for government and free primary healthcare (PHC) services provided for children and pregnant mothers^{2, 3}. Maternal and child mortality rates are declining on a national level, yet progress remains insufficient to achieve Millennium Development Goals. Given South African middle income status, the unacceptable high maternal and child morbidity and mortality rates remain an area of great concern^{4, 5, 6}. Globally, maternal and child mortality figures are important indicators that have been used for comparing a country's commitment towards targets to reduce maternal and child mortalities, the responsiveness of health system to meet the health needs of various groups of the society and the socioeconomic development of a nation.

To improve the outcomes of different government implemented strategies which include overhauling of the health system, especially focusing on a PHC Reengineering approach and by improving the functionality and management of the health system. To this end, the department of health should put measures in place to ensure that the health system is managed by appropriately trained and qualified managers, while strengthening a district health system to assume more responsibilities. Accordingly, the delivery and management of health services has been devolved to local (district) levels with the aim to decentralise and transform the health system driven by the PHC approach (NDoH, 1997; NDoH, 2014). The PHC approach has been driven by and in line with WHO is recommend action to Government's for both the delivery of healthcare services as well as restructuring of the country's health system. Implementation of the full packages of district services through PHC facilities such as Clinics, Community Health Centres (CHCs), and district Hospitals and providing comprehensive services that

include promotive, preventive, rehabilitative, curative and effective referrals are critical elements in a patient-centred quality of care improvements plan. The PHC strategy enables districts to plan, manage, and implement as well as monitor progress in terms of their achievements. For instance, maternal and child health care service is one of the top priorities of the PHC programme, provided freely in the public health sector with major outcome targets. The South African health improvement plan of 2009-2014 for the Public health sector focus on implementing a Ten-Point plan commitment with four strategic outputs to be achieved. The Ten Point plan includes:

1. Provision of strategic leadership and creation of a social compact for better health outcomes.
2. Implementation of a National Health Insurance (NHI).
3. Improving the quality of health services.
4. Overhauling the health care system and improving its management.
5. Improving human resources management, planning and development.
6. Revitalisation of health infrastructure.
7. Accelerated implementation of the National HIV&AIDS and STI National Strategic Plan (2007-2011) and increased focus on TB and other communicable diseases.
8. Mass mobilisation for better health for the population.
9. Review of the drug policy.
10. Strengthening research and development.

Linked to this plan, a Negotiated Service Delivery Agreement (NSDA) was signed by the Minister of Health in September 2010, and to tracking progress of the plan, the government has identified four outputs for the health sector. These are:

Output 1: Increasing Life Expectancy.

Output 2: Decreasing Maternal and Child mortality.

Output 3: Combatting HIV/AIDS and decreasing the burden of disease from TB.

Output 4: Strengthening Health System Effectiveness.

2.2 Maternal and child health

Under the Millennium Development Goals (MDGs), adopted by the international community in 2000, countries committed to accelerate the reduction of maternal and child mortalities. The MDGs 4 and 5, targets in particular, stated to reduce child and maternal mortality by 2/3 and 3/4 respectively between 1990 and 2015⁷. South Africa is one of the signatory countries

committed towards reaching the MDGs by 30 September 2015. But still there are so many challenges and it is questionable whether the country is going to achieve all the goals by 2015. For instance the 2010, South Africa's report to the United Nations General Assembly on progress on reduction to maternal and child mortality as stated in the MDGs was unlikely to achieve the targets and still there is more to be done^{8,9}. The difficulty of meeting the targets for these vulnerable groups indicates the gravity of the challenge and the strongest arguments for more concerted efforts to be taken in improving the maternal and child health outcomes in the country. Indeed, maternal and child health programme is a key component of the district health system and top priority area as has been indicated with major targets and numerous interventions. For instance, the target indicates that the maternal mortality ratio must decrease from 625 per 100,000 to 100 (or less) per 100,000 livebirths by 2014. The child mortality rate must decrease from an estimated 104 deaths per 1,000 live births to 20 per 1,000 live births by 2014.

A number of interventions and packages of care that focus on improving maternal and child health have been implemented in the country in the last few years. This strategy is regarded as the key to improving maternal and child health. The widely endorsed strategies for promoting safe childbirth, skilled birth attendance, timely referral for emergency care, prevention of mother-to-child HIV transmission, improving the functioning healthcare system, the launch of the Campaign on the Accelerated Reduction of Maternal Mortality in Africa (CARMMA) in May 2012, introduction of the District Clinical Specialist Team (DCSTs) in September 2012 to support districts in clinical guidance to healthcare workers in health facilities, National Maternal, Newborn, Child and Women's Health and Nutrition (MNCWH&N) Strategic Plan, restructuring of the health system, and commissioning of different studies on maternal and child health and making maternal deaths a notifiable condition and by the formation of the National Committee on Confidential Enquiry into Maternal Deaths (NCCEMD) are some of the steps and commitments that have since been taken to improve maternal and child health outcomes at facility and district levels using the Primary Health Care approach^{7,8,11,12}.

2.3 District Health Plan

The delivery and management of health services devolved to local (district) levels in South Africa. A District Health Management Team (DHMT) is responsible for developing the

district's health plans (DHP) (NDoH, 1997). Per se district health plan informs, the provincial health plans, and the provincial health plans must build on plans developed by health districts of the Province. In terms of the 1999 Public Finance Management Act 29, national and provincial departments are expected to develop three year strategic plans, which will inform the medium-term expenditure framework (MTEF). Both provincial and district health management team prioritise interventions, prepare plan and implement medium-term sub-district and district health plans, health resources need and use this information to assess and report progress in achieving the stated targets, objectives and goals¹³. For instance, in maternal and child health programme the priorities include improving care at PHC facilities, safe delivery, management of obstetric emergencies, newborn care ensuring that all pregnant mothers receive early antenatal care visits, postnatal care visits and child vaccinations.

2.4 Study district

John Taolo Gaetsewe district is one of the five districts in the Northern Cape Province, in South Africa. The district has a 23,162 km² and of three local municipalities (Gamagara, Ga-Segonyana and Joe Morolong) of which the majority (80%) are villages, thus making the district mostly rural. Of the three local municipalities Joe Morolong is the most underdeveloped area in terms of infrastructure, roads, residential housing and with high poverty levels. The estimated population in the district in 2014, is 230 938 with the majority being blacks. Comparison of the 2001 and 2011 population Census indicate an annual increase of 1.56% and household growth rate of 2.58%. Joe Morolong had a negative growth rate of 0.99% with Gamagara recording the highest population growth rate of about 6% due to employment opportunities in the mining sector. Afrikaans, English and Setswana are the main three languages spoken with Setswana being the most spoken language (more 75% of the population) while Afrikaans is the second most spoken and English being the least spoken language. The district has the most challenging road infrastructure for the effective delivery of health services. The JTG district economy is based on mining (11 manganese and 3 Iron Ore mines) and mixed farming, but there is a high level of unemployment and low level of income opportunities. There are three district hospitals, while the two public hospitals are both located in Ga-Segoyana local municipality and the other private hospital, Medi-clinic in Kathu (Gamagara Municipality). There are 44 health facilities of which 5 are Community Health Centres, 37 clinics and 2 district hospitals. Yet, the district has poor maternal and child health outcomes.

2.5 Study framework

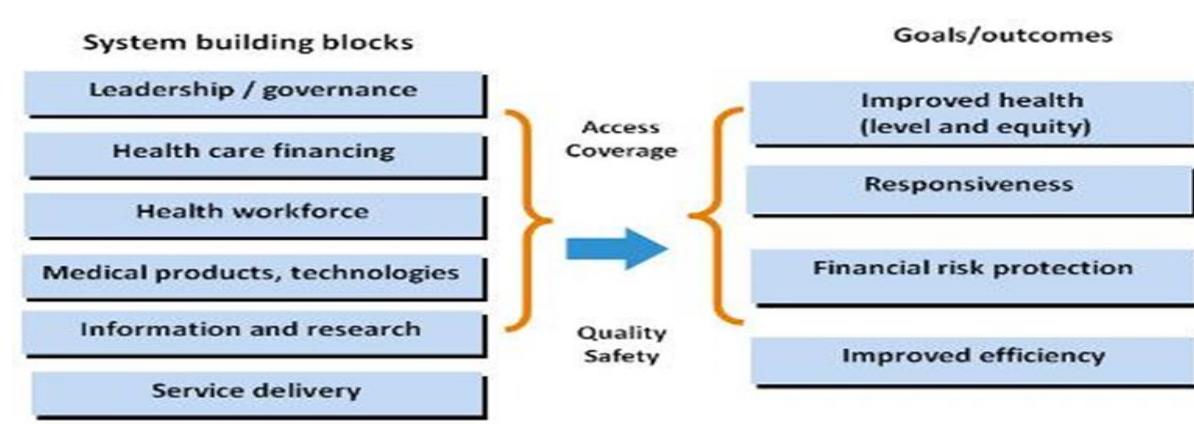
Although there have been some successes noted in the reduction of maternal and child health mortalities in John Taolo Gaetsewe district over the last two years, progress remains insufficient. Reports indicate that maternal mortality figures in the district are unacceptably higher compared to other districts within the province as well as compared with the National averages figures¹⁴. In addition to this, the JTG's district MMR showed substantial fluctuation in the last five years. According to the National Committee on Confidential Enquires into Maternal Deaths (NCCEMD) report, in 2009/10 the MMR was 129.9 per 100,000 live births. In 2010/11 the MMR drastically increased to 435.3 per 100,000 live births. In 2011/12 the MMR fall down to 191 per 100,000 live births. In 2012/13 the MMR increased to 260.5 per 100,000 live births. The most recent confidential enquiry report by the committee for the 2013/14 has reported that the high maternal mortality rate significantly slowed down to 93.2 per 100,000 live births. In a record review we conducted for the period 01 January 2014 to 30 September 2014, the MMR was 123.18 per 100,000 live births in JTG district.

In the light of the maternal and child health, MDGs commitment of the government, and as a priority health programme of the district outlined in the PHC Reengineering approach, this is a serious public health concern that requires urgent attention. Hence, the challenges need to be identified and addressed if the current poor maternal health outcome is to be reversed and to achieve the vision of the government's-better health for all South Africans. This needs to ensure access to good quality healthcare for all. Yet there is no contemporary study that systematically examines and identifies the root causes for poor maternal and child health outcomes in the district. This study, therefore, aims to provide information on the effectiveness of maternal and child health programme and strategies that aim to improve maternal and child health in the JTG district.

2.5.1 WHO Health System Building Blocks

The World Health Organization (WHO) health system building blocks which include capable leadership or governance to implement policies in effective and efficient ways, healthcare financing, human resources for health, availability of infrastructure, equipment, information technology, as well as the availability of drugs and medicines products have been used as framework to guide the development of study instruments (see Figure 1 and Table 1 below).

Figure 1: WHO Health Systems Framework



Source: WHO 2008

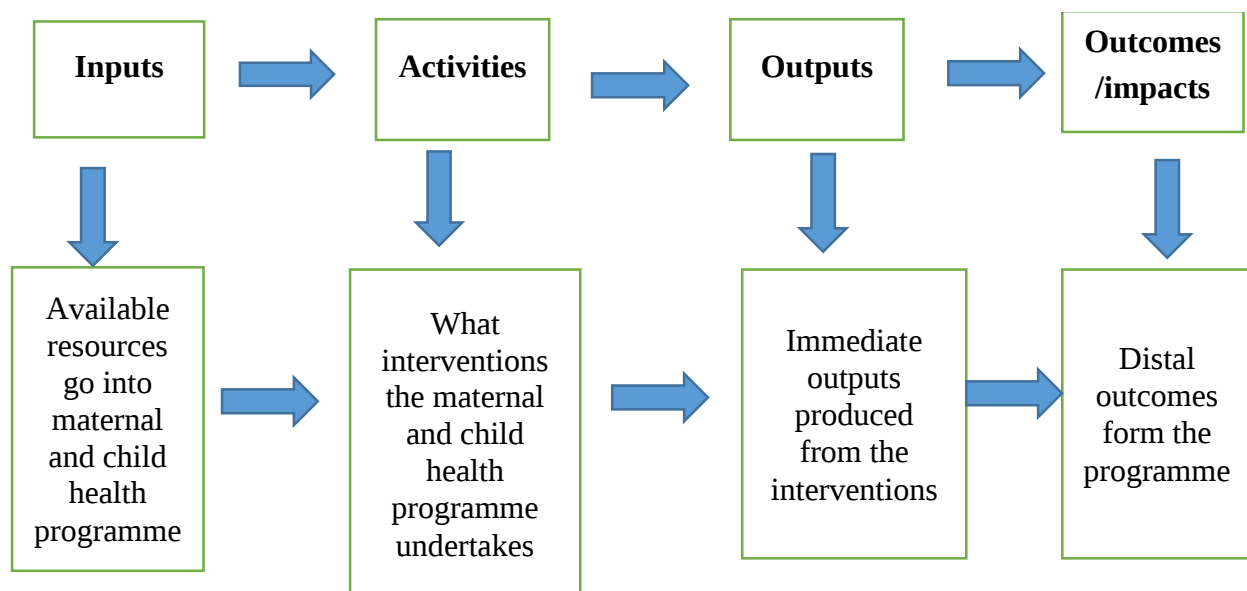
Table 1: Health system building blocks and indicator for progress measurement

System building blocks	Indicator for progress measurement
Leadership/governance	A health system consists of organizations, resources, finance, human resources and actions whose primary interest is to promote, restore or maintain health. Leadership must guarantee effective oversight, regulation, accountability and capacity to influence activities to produce organizational goals or outcomes.
Health care financing	Systems must raise adequate funds for health services in the most efficient way, ensuring that people can access affordable, equitable and necessary health care services.
Health workforce	Sufficient in number of a well-trained health work force that are fairly distributed; competent, responsive and a productive staff should be available to achieve the best health outcomes possible, given available resources and circumstances.
Medical products/ technologies	Essential medical products, vaccines and technologies of assured quality, safety, efficacy and their cost-effective use is critical for achieving better health outcomes.
Health services	Health services must be of a good quality, efficient, effective, safe and accessible to those who need them, when and where needed, with minimum waste of resources.
Information and research	Health information systems should generate useful, reliable and timely information on health related issues for analysis, planning, monitoring and dissemination of reports

2.5.2 The Logic Model

The logic model show the link between inputs (available resources in relation to the required or necessary for programme implementation), activities (the actual intervention what the maternal and child health programme is doing in order to achieve better maternal and child health outcome) and what the service provider desired or hope to achieve outputs (direct products obtained as a result of programme activity) as well as an outcomes (short-term intermediate, long term distal). Figure 2 illustrate the basic components of a programme logic model. From the model, it is clear that inputs for interventions are critical to achieve the outcome.

Figure 2: Simple Logic Model for programme evaluation



Thus, by using these two models (the WHO-health systems building blocks framework; and the logic model) it was possible to evaluate the maternal and child health programme. How the available resources and interventions are contributing to expected outcomes/impacts. Inadequate resources and ineffective an implementation of intervention shows how an intervention hinders from achieving the direct and indirect expected results, outputs or outcomes in the short-term, medium-term or long-term results.

3. Objective of the Study

3.1 Broader objective of the study

The broader objective of the study is to assess and evaluate the effectiveness of maternal and child health programme in John Taolo Gaetsewe district through conducting a facility-based linked cross sectional survey.

3.2 Specific objectives of the study

1. To assess the type and quality of health care services that are currently provided to pregnant women by maternal and child health programmes,
2. To evaluate the utilization of available healthcare services by pregnant women,
3. To explore the availability of health systems to deliver good quality maternal and child health services to achieve the expected outcomes;
4. To assess levels of mother's satisfaction on provided maternal and child health services;
5. To explore the underlying determinant factors for poor maternal and child health outcomes,
6. To make recommendations on strategies that may improve maternal and child health outcomes.

3.3 Research Questions

To achieve the research objectives, answering the following pertinent research questions were important.

What maternal and child healthcare services are currently provided in JTG district?

1. What is the extent of maternal and child health services utilization rate by pregnant mothers?
2. Does the district have a health system (health workforce, basic equipment, budget and facilities) in place to provide quality services?
3. What is the level of client's satisfaction on provided maternal and child health services?
4. What are the reasons for not achieving maternal and child health outcomes as expected?

4. Research Design and Research Methodology

4.1 Study design

Between September and November 2014, a cross-sectional study on “Maternal and Child Health Programme Effectiveness Evaluation” was conducted at all public health facilities in JTG district. Quantitative and qualitative data collected from health facilities and research participants to analyse factors affecting maternal and child health outcomes. These healthcare facilities were 2 District Hospitals, 5 Community Health Centres, and 37 Clinics. The study include participants from antenatal care visit to health facilities. Mothers who visited public health facilities for six-weeks for their infants first DPT immunisation were interviewed using structured questionnaires to assess their maternal and child health services uptake; accessibility of the services, reproductive health knowledge, attitudes and practices as well as their level of satisfaction on the provided services. Use of services was determined by the participants self-report and was confirmed from clinical records. Exit interviews for mothers who opt for abortions; direct observation during antenatal care visit, and postnatal care; discussion with healthcare workers, focus group discussions (traditional births, high reproductive health risk groups such as pregnant teenagers and mother who do not utilise services).

The World Health Organization (WHO) health system building blocks and the logic model have been used as framework to guide the development of study instruments. These building blocks include adequate, well-trained and caring human resources for health, health care financing, availability of infrastructure, equipment and information technology, capable leadership/governance to implement policies in effective and efficient ways, and the availability of drugs and medicines products.

4.2 Study population and sample size

Mothers attending six-week immunization for their infants in JTG district were study population from which the sample was drawn. Census 2011 used to estimate women of reproductive age group in JTG and the estimated figure was about 72,000. The six-week immunisation and reproductive health services utilization rate data from the 2012/13 District Health Information System (DHIS) used to quantify the number of mothers expected to attend six-week immunization visit for their infants per facility over a study period of time.

4.3 Sampling techniques and sample size for facility based survey

For the facility based survey a precision based sample size is calculated taking into account the expected annual utilization of antenatal health services, a design effect of 2 to account for clustering within facilities and a precision level of 2-3%; and 95% confidence level. When we put the confidence level and the confidence interval together with the estimated 72,000 study population provided a convenient sample of 383 mothers in total to assess and evaluate the effectiveness of maternal and child health programme in JTG district. All public health facilities in the district were included and mothers attending six-week immunization services for the infants consecutively sampled from each facility. Sample size was allocated for each facility proportionate to their size as determined by the number of six week immunizations for 2013/14.

4.4 Conceptual framework and study variables

There is no clear and universally accepted model of health care which will achieve better health outcomes. However, routine indicators analysis on basic effectiveness evaluation variables and evidences can be used as proxy to assess the effectiveness of health interventions and expected better health outcomes. In this study comprehensive analysis was done on the immediate and services effectiveness factors as well as social and institutional factors affecting better health outcomes. Table 2 presents a conceptual framework used as a guide for the study and variables in data collection. The six variables are accessibility, services utilization, quality of services provided, and availability of systems which include workforce, health information, and client satisfaction and integration and referral process. This table informs the study variables and methods of data-gathering tools to evaluate the availability and quality of maternal and child health services at all PHC facilities in JTG district. The tools were primarily questionnaires, interview, focus groups discussion, direct observations, and review of secondary data. Data was collected from all PHC facilities with the assistance of data capturers (Ward Based Counsellors). The questionnaires were conducted in three languages (Africans, Setswana and English). The questionnaires were translated from English, and then translated back into English.

Ward Based Counsellors (WBC) were trained for two days on data collecting tools and research ethics. All of them signed a confidentiality of individual information on collected data.

However, because they are linked to a health facility, the project team had decided to interchange WBC data capturers to avoid or limit the problem on data quality due to a potential conflict of interest as they are linked to the facility, and to protect the confidentiality of individual information.

Table 2: Conceptual framework used for guiding the study and variables selection

Evaluation variables	Sources/evidence	Methods used
Accessibility of services	• Hours of availability services • Transport • Payment for services • Referrals and after hours arrangement • Making appointments	• Secondary data review • Interviews with staff and respondents • Focus groups discussion • Observations of daily activities
Service utilization	• Timely utilization of services • Number or volume of services utilised per a certain period of time • Coverage of services	• Secondary data review • Interviews with staff and respondents • Focus groups discussion key informants
Quality of services provided	• First contact facility status • Referral • Comprehensiveness of services • Continuity of services in line with the PHC Re-engineering principle	• Secondary data review • Patient record review • Interviews with staff and respondents • Focus groups discussion; • Observations of daily activities
Availability of health systems	• Human resources • Financing of health services • Leadership/management • Health facility infrastructure • Information management and information technology	• Secondary data review • Interviews with staff and respondents • Focus groups discussion • Observations of daily activities
Client satisfaction	• Waiting time • Time spent in examination • Staff attitude • Follow-up • Cleanliness of facility	• Interviews with staff and respondents • Focus groups discussion • Observations of daily activities • Secondary data/reports
Health intervention outcome	• In facility maternal mortality	• Secondary data review • Interviews with staff • Focus group discussion with key informants
Referrals	• Care at the appropriate level • Facilities used optimally and cost-effectively • Clients who most need services can access them in a timely way • Services at primary health services and reputation	• Secondary data review • Interviews with staff and respondents • Focus groups discussion • Observations of daily activities

4.5 Study procedures

Data was gathered using a questionnaire adapted from validated tools^{15,16}, which included information on maternal reproductive knowledge, attitude and practice, socio-economic status, antenatal care, delivery and postnatal visits (six-week), facility performances and constraints in provision of maternal and child health services. Questionnaires were translated into two local languages from English to Afrikaans and Setswana languages and back translated into English for its accuracy. A two-day training was provided for data collectors.

Mothers who attended public health facilities for the six-week immunization for the infant's first DTP dose between September-November 2014 were interviewed using a standardized questionnaire addressing women's knowledge of maternal and child health services utilization and their practice. Figure 3 shows the training session of data collectors on the research methodology and questionnaire.

Figure 3: Training of data collectors on research questionnaires



Secondary data analysis on written materials and other documents on routine health information data on reproductive health performance from facility records was collected. This data includes service statistics such as the number of cases seen per category; number of maternal and child deaths at the facility; number of pregnancies and births; and number of

antenatal care visits, and postnatal visit reviewed. In addition to this, the study reviewed programme plans and financial records.

Exit interviews conducted on women who opted for an abortion to obtain feedback on health worker attitude and facility conditions. The interview took place at the facility by health professionals and psychological support was provided to respondents by professional nurses.

In each of the selected facilities, facility manager; heads of maternal and child health programme or staff were interviewed to assess the availability of human resources for health in terms of their quantity, type of health profession, availability of key resources, planning and management systems; and 7/24 availability of maternal and child health services reviewed. Direct observation on routine actions using a checklist used to measure the performance of the provider during an ordinary antenatal care visit and postnatal care (six-week) visit.

Two focus group discussions were held in different communities in JTG district. For each focus group discussion, 15-20 key informants were selected from the following 'groups. Stakeholders also participated in the two focus groups discussions, each of about three-four hours duration.

- (i) Women who fully or partially missed reproductive health services
- (ii) High risk reproductive health groups which include adolescents, mothers who plan to give birth at home, late presenters to reproductive health, and those women who have unplanned pregnancies and women with a history of abortion.
- (iii) Traditional birth attendants.
- (iv) Healthcare service providers

4.6 Ethical consideration

The study was approved by the Northern Cape Provincial Health Research and Ethics Committee (NCPHREC), reference number 2014/021. Informed consent was obtained from all mothers prior to their enrolment in the study.

4.7 Limitation of the study

The study design has many strong points to generate new information on the maternal and child health care services with a particular focus in JTG district. Per se it has the potential to provide new insights into complex client and organisational issues. However, the use of Ward Based Community Lay Counsellors for the data collection was the main weakness. In some facilities this may create reservations to answer questionnaires from the perspective of the respondents, in fear of personal information confidentiality as well as conflict of interests for data collectors as they are linked to a facility. In addition to this, as the study is focused on healthy mothers and children who are able to come to a health facility for their child six-week immunization services, the result may not represent those mothers and children who were not able to attend the six-week immunization due to sickness or other barrier factors. Despite this known limitation, the study stakeholders, facility managers, and district health management team accepted the findings as a true account of maternal and child health programme in JTG district and considered the results to be applicable to other districts in the Province.

5 Results of the Study

A written questionnaire was distributed to a total of 383 mothers who brought their child for the six-week immunization service to all health facilities within the district. Of 383 total questionnaires distributed, 272 were completed and returned (response rate 71%). Literature indicate non-response is a problem for all studies that rely on volunteer samples, especially those exploring sensitive topics. Socio-demographic characteristics of the study participants, maternal and child health services uptake, quality of services, health outcomes and client's satisfaction were assessed. Supply side challenges analysed with respect to the WHO's health system building blocks concept. Data analysis was done using the statistical package STATA version 13. Results were expressed using descriptive statistics, means, percentages, medians, minimum and maximum values where necessary, data was disaggregated by different socio-economic status of respondents, by types of health facilities, district hospitals, CHCs, and Clinics. The Wilcoxon test was used to test significant differences.

5.1 Socio-economic and demographic characteristics of respondents

The study revealed that utilization of health services is highly influenced by different socio-economic and demographic factors which include age, income, level of education, and personnel attitude. Hence, specific individual-level characteristics both at the client and service providers' side are crucial in explaining the maternal and child health uptake and outcomes in the JTG district. Out of 272 mother-infant pairs interviewed at 6 weeks immunization visits, 68.89% had secondary education. Only 8.9% have completed college or above. The majority (84.73%) respondent mothers were unemployed or housewives. Regarding the type of employment sector, government and company employment jointly account for only 15.27%. Most of the unemployed mothers depend for their source of income on disability grant, child support grant and donations. However, for 66.6% respondent mothers the total monthly income was less than or equal to one thousand Rand (R1000.00).

About one-fifth (18.2%) of the respondents were teenagers younger than 20 years of age, 71.96% were single mothers, Close to half (44.69 %) of mothers reported they had their first baby before the age of 20 years. Out of the 18.2% respondent mothers who were teens in this study, 94%, and 84% of them were unemployed and single mothers respectively. Regarding

ages of the respondents, 15 years was the youngest age and 45 years was the oldest age. As regards to the marital status of the respondent women, 16.61% were married, 9.23% living together, 1.11% separated/divorced, 1.11% are widowed. About two-third (71.96%) respondents were single mothers. This shows the socio-economic challenge teenage mothers face in addition to other known risks of teenage pregnancy, including adverse infant outcome, academic failure and social discrimination. Regarding how pregnant women felt about their pregnancy, 34.2% of respondent women indicated that the pregnancy was wanted. 65.8% was not wanted at that time, 30.48% respondents indicated they wanted to be pregnant later, and 35.32% of the respondents didn't want to be pregnant then or at any time in the future. Table 3 presents a summary of the socio-economic and demographic characteristics of the study respondents.

Table 3: Socio-economic and demographic characteristics of the study respondents

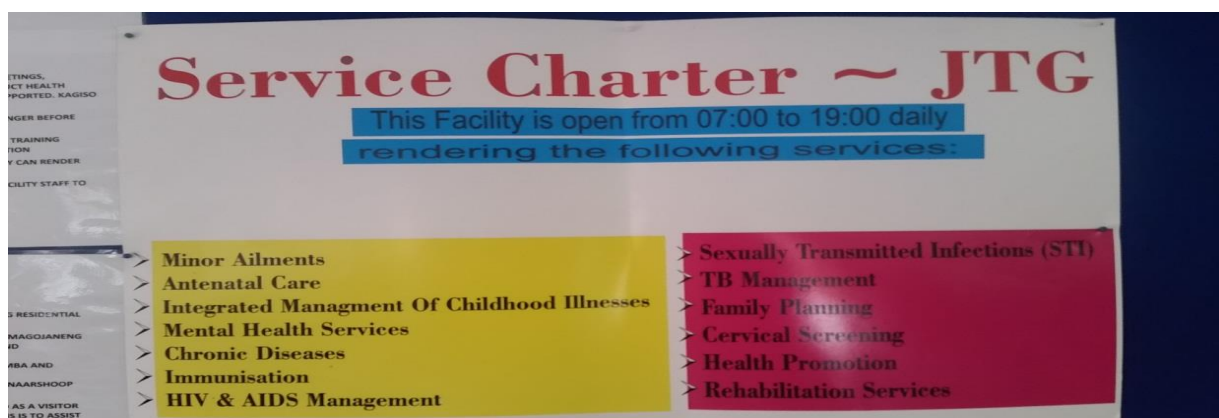
Characteristics	Classification	%
Age group of respondents	Less than 20 years of age	18.20
	Older than 20 years of age	81.80
Marital status of mothers	Married	16.61
	Living together	9.23
	Widowed/separated	1.11
	Single	71.96
Education status	School not attended	2.22
	Elementary (grade 1-7)	19.26
	High school (8-12)	68.89
	College or above	8.90
Employment	Employed	15.27
	Unemployed	84.73
Total amount of monthly income	Less than equal to R1000.00	66.67
	Between R1000.00 and R5000.00	25.92
	Greater than R5000.00	7.41
Housing	Own house	27.14
	Rented	5.58
	Living with relative/spouse	57.52
Main sources of water	Tap	93.73
	Bore hole/well	6.25
	River/other	1.80
Connected to electricity	Connected	88.97
	Not connected	11.03
Type of toilet	Flush toilet	21.72
	Pit latrine	44.19
	Ventilated pit latrine	30.34

In this study, only 27.14% respondents own houses, while 5.58% live in rented houses; 57.52% live with their relative, and 9.67 a spouse/partner. With regards to the main source of water used for drinking, 93.73 % respondents were using tap water either inside the house (16.54%); or yards (15.44%) or (61.76%) public taps. 88.97% of the houses are connected to electricity, and for more than 80.44% of the respondents, electricity is the main type of fuel for cooking in the house. 21.72% households are using flush toilets, 44.19% pit latrines private, and 30.34% ventilated pit latrines.

5.2 Available maternal and child healthcare services in the JTG district

Maternal and child healthcare services are regarded as a priority healthcare service in South Africa. This is in line with international experience and donors' support area. The World Health Organization, UNICEF, and researchers encourage policy makers in the health sectors to pay special attention for the healthcare needs of mothers and children because of their biological nature, socio-economic status, and the burden of diseases. In order to meet this critical need, the Department of Health has started to implement different improvement strategies that ensure increased access to good quality health care services for all women and children. In recent years, the number of health facilities in remote and rural areas has been increased, availability of services improved, for effective utilization of services, maternal and child health services are provided free of charge at all PHC. Figure 4 below shows available services and working hours at facility level, available services along with working hours information posted at a visible place for clients. However, none of the CHCs were providing *service* for 24 hours a day and seven days a week.

Figure 4: Service charter indicating available services and working hours



Different programmes to accelerate the implementation of key strategies that will reduce maternal, newborn and child mortality in the country have been implemented. For instance, the Campaign on Accelerated Reduction of Maternal and Child Mortality (CARMMA) launched in May 2012¹⁷. In addition to this, the remodelling of the Primary Health Care (PHC) Reengineering approach on the basis of a three-pronged model which includes: i) strengthening the delivery of ward-based PHC outreach teams (WBOTs) by training community health workers in the provision of basic obstetric and neonatal services, ii) integrated school health teams, and iii) appointing district clinical specialist teams (DCSTs) provide support for maternal and child health programmes to improve maternal and child health outcomes¹⁸.

Maternal and child health services that are currently provided in the district include: Reproductive health services, antenatal care services to pregnant mothers, antenatal client initiated on ART, delivery in facilities, mother postnatal services, family planning, cervical cancer preventative services, termination of pregnancies conducted or assisted, improve neonatal and child health care as well as improved survival rates, immunization, preventing transmission of HIV from mother to child (PMTCT), survey childhood communicable diseases to prevent outbreaks, Integrated management of childhood illnesses from 2-5 years, integrated management of childhood illnesses at community level, Preventive and promotive services, nutrition, promotion of a safe and supportive environment to provide information, build skills counselling and access to health services. Table 4 below indicates the list of services that are available and provided under maternal and child health programmes in the JTG district.

Despite conducive government policies and many programme areas of maternal and child health services, the utilization rate as well as coverage of services are not as expected to adequately meet the objective of the programmes and sub-programmes. Poor implementation of existing maternal and child healthcare programmes are largely responsible for the poor maternal and child health outcomes, which in turn are linked to the health system factors. Improving the quality of health services at the primary care level, with timely referral of patients to higher levels in the health system when deemed necessary are dependent on health systems and their effective function.

Table 4: List of services provided under MCH programme and expected outcomes in the JTG district

List of services provided	Key Component/ intervention	Objective of intervention	Activities that are critical	Performance indicators	Expected outcome
Maternal Health	Antenatal care	To maintain good health of mother during pregnancy To identify high risk cases and to provide appropriate management To prevent development of complications To decrease maternal and infant mortality and morbidity To remove the stress and worries of the mother regarding the delivery process To teach the mother about child care, nutrition, sanitation and hygiene To advise about family planning To effectively care for under-fives accompanying pregnant mothers	Education on importance of early antenatal care Regular and uninterrupted antenatal care attendance Availability and improved access to of services Provision of good quality of services Adequate and qualified Human Resources for Maternal and Child Health	Antenatal 1st visit before 12 and 20 weeks rate Regular follow –up	Increased rate of booking for Antenatal care and services utilization To improve maternal health and reduce maternal mortality and morbidity
	Antenatal client initiated on ART rate	To reduce the risk of disease progression and transmission in HIV-infected individuals and prevention of transmission	CD4 Count Availability of services Counselling Confidentiality of test results Education and counselling Availability and improved access to Antiretroviral therapy (ART) Commitment and the importance of adherence Adequate and qualified Human Resources for Maternal and Child Health	Number of antenatal client initiated on ART rate Adherence rate	Reduction in the risk of disease progression in HIV infected individuals and prevention of transmission

List of services provided	Key Component/ intervention	Objective of intervention	Activities that are critical	Performance indicators	Expected outcome
	Delivery in facility	To provide safe delivery and prevent complications	Improve access to Skilled Birth Attendance Planned and emergency patient transport system that fully functional at all times	the proportion of deliveries assisted by a skilled birth attendant Delivery in facility under 18 years rate Still birth in facility rate	Safe delivery and reduction and prevention of complications and deaths
	Mother postnatal services	To avoid complications following delivery and provides opportunities for mothers to remain healthy and recover fully from child delivery.	24/7 working health facilities at an accessible distance Effective patient transfer between health facilities(or where deliveries are conducted) Waiting rooms for maternity cases	Mother postnatal visit within 6 days rate Facility Maternal Mortality Ratio	Reduced mortality from delivery complications Less waiting time
	Family planning	To reduce the prevalence of unintended pregnancies and unsafe terminations of pregnancy.	Education on family planning and contraceptives Contraceptive health services Availability and improved access to of services	Couples year protection rate Number of unwanted/terminated pregnancies	Reduction in the risk associated with unwanted pregnancy
	Cervical cancer preventative services in women 30 years	To prevent cervical cancer through testing (screening) to find pre-cancers before they can turn into invasive cancer.	Adequate and qualified Human Resources for Maternal and Testing (screening) to find pre-cancers Immunization Cancer treatment	% of Cervical smears in women 30 years and older as a proportion of 10% of the female population 30 years and older.	Protecting women against Cervical cancer
	Termination of pregnancies conducted or assisted	To provide services when a woman chooses to end a pregnancy or when spontaneous abortion, or miscarriage occur.		% of Termination of Pregnancies conducted or assisted Number of trained community health workers to support the programme	Reduced morbidity and mortality among pregnant women To prevent unwanted pregnancies and promote women's health

List of services provided	Key Component/ intervention	Objective of intervention	Activities that are critical	Performance indicators	Expected outcome
Child health	Improve neonatal and child health as well as improved survival rate	To improve the health of neonatal and child as well as improved survival rate	Promotion of Breast Feeding Immunization Education on appropriate care and feeding pattern	• Inpatient death under 1 year rate • Inpatient death under 5 year rate • Number of sick children referred to a hospital	Improvement in child survival
	Immunization	To protect child against tetanus and against childhood killer diseases such as measles, tuberculosis, diphtheria, neo-natal tetanus, whooping cough and poliomyelitis among children.	Mothers/caregivers education Improve immunization coverage Awareness Coordinated and integrated action with other sectors	• Number of immunized children per year and per different category • Immunisation coverage under 1 year • Measles 2nd dose coverage • DTaP-IPV/Hib 3 - Measles 1st dose drop-out rate	Prevent childhood illnesses by immunizing children against childhood illnesses Improvement in child health and survival
	To prevent transmission of HIV from mother to child (PMTCT)	To eliminate mother to child transmission of HIV infection	Improved access to HIV treatment for both mothers and children Improved management of co-infection Increased the number of trained nurses to initiate ART and community health care workers to support	Number of mothers that are initiated on HART	Elimination of mother to child transmission of HIV infection
	Survey childhood communicable diseases to prevent outbreaks	To prevent childhood communicable diseases outbreaks	Improved surveillance method Education Counselling	• AFP detection rate • AFP stool adequacy • Positive measles cases detected • Number of outbreaks reported	Improved child health and survival

List of services provided	Key Component/ intervention	Objective of intervention	Activities that are critical	Performance indicators	Expected outcome
	Integrated management of childhood illnesses from 2-5 years	To improve neonatal health and reduce neonatal mortality and morbidity as well as the management of genetic disorders	Identifying disease symptoms to classify the illness	• Child under 5 years pneumonia incidence • Child under 5 years pneumonia case fatality rate • Child under 5 years diarrhoea with dehydration incidence per 1,000 children under 5 years • Child under 5 years diarrhoea case fatality rate	Improved child health and survival Better management of illness
	Integrated management of childhood illnesses at community level	To improve child health and reduce child mortality and morbidity as well as the management of genetic disorders	Identifying disease symptoms to classify the illness	• Number of visits to ECD centres • Amount of Vitamin A administered • Deworming syrup administered to 2 – 5 year old children • MUAC measurement taken in under 5 year old children • Nr. Of children referred to clinic by WBOT	Improved child health and survival Better management of illness
	Preventive and promotive services	To address the health needs of school going children	Education Collaborating	• Coverage of Quintile 1 and 2 schools • School Grade 1 screening coverage • School Grade 8 screening	Improved child health and survival Addresses the needs of school going children and youth with regard to their immediate and future health needs

List of services provided	Key Component/ intervention	Objective of intervention	Activities that are critical	Performance indicators	Expected outcome
	Nutrition	To prevent anemia and malnutrition in pregnancy and stunted growth in children	Education on breastfeeding Counselling	• Infant exclusively breastfed • Vitamin A dose 12-59 months coverage • Child under 5 years severe acute malnutrition • case fatality rate	Improved child health and survival Healthy growth and development
	Promotion of a safe and supportive environment to provide information, build skills counselling and access to health services	To provide necessary information concerning pregnancy and childbirth	Education Counselling	• No of new PHC facilities implementing AYFS services • Number of HCP trained on AYFS • Number of Peer educators trained	Improved child health and survival

5.3 Services utilization by mothers and children

Utilization of maternal and child healthcare services is a proximate determinant of maternal and child outcomes. In this study, results from a survey method that was used for collecting information from a sample group of mothers who come for the six week immunization for their children, using standardized questionnaires or interviews at immunization facilities suggest that 96.15% of the pregnant women attended antenatal care during their pregnancy. Of which 90.15% pregnant mothers attended their first ANC visits at public health facilities, 5.68% at private health facilities and 4.17% at both public and private facilities. The proportion of pregnant women who booked for an early ANC first visit before 12 weeks of pregnancy was 26%. The mean gestational age of respondents at their first antenatal visit was 26.37. Late ANC booking was most common (66%) among the teenagers (<20 years). One fourth (25.6%) of pregnant mothers booked their first ANC care after 20 weeks. Focus group discussion participants indicated distance to health facilities, lack of knowledge, long waiting time, cultural beliefs, and poor quality service at health facility level as major contributors for late ANC booking. Figure 4 shows pregnant mothers waiting for their ANC visit at a PHC facility.

Figure 4: Pregnant mothers waiting for their ANC visit at a PHC facility



The majority (92.2%) of deliveries occurred in health facilities, primarily in public sector (84.64%), of which 14.98 % of mothers had clinics/CHCs delivery, and 69.6% had hospital delivery. Because all CHCs do not render a 24/7 hour services, many deliveries have to be referred to the two district hospitals. With regards to the type of delivery, 79% were normal vaginal deliveries, and 19.48% were Caesarean section. This suggests that pregnant mothers have access to delivery services and a decision to use facility delivery made through effective client-provider interaction and appropriate counselling. Close to one-fifth mothers visited a healthcare provider only after a week of discharge from maternity.

The table 5 shows health services utilization across health facilities in the district through clients record review of maternal and child health services utilization and health outcomes for the period 01January 2014 to 30 September 2014 in JTG district. The table covers several aspects of maternal and child health services utilization, which include first ANC visits in weeks, delivery in facility, in facility maternal deaths, birth and inpatient deaths, and mother's postnatal visit within six days after delivery. The data shows utilization was low for most of the indicators and poor health outcomes were prominent except for delivery in health facilities. This suggests that understanding the factors that influence utilization becomes important. For instance, first antenatal care, skilled attendance at birth in CHCs low (4.8%), the two hospitals are where majority (95.14%) of the deliveries takes place, and mother postnatal visits within 6 days after delivery were poor.

In this study, utilization of services can be affected by mothers at birth, which shows 17% of pregnant mothers were teenagers. Although good facility conditions are enabling factors for encouraging mothers to give birth at facilities, the fact that in this study, only 4.8% of deliveries occurred at CHCs, suggests that women in urban areas are more likely to utilize services compared to those in the rural areas.

The results from a survey of sampled mothers, who came for the six week immunization for their children using standardized questionnaires at facility, and facility level record reviews show similar results in terms of the study variables.

Table 5: MCH services uptake and health outcomes for the period 01January 2014 to 30 September 2014

Health facility		First ANC care visit			Delivery in facility				Mater nal death in facility	Birth and Inpatient death						Mother postnatal visit within 6 days after delivery
Type	Name	1st visit total	<14 weeks	<20 weeks	Total birth	Live birth	C section	< 18 years		Still birth in facility	Live birth under 2.5kg	Inpatient death 0- 7 days	Inpatient death 8-28 days	Inpatient death neonatal total	Inpatient death under 1 year total	
District hospital	Tshwaragano			-	1996	1952	193	217	0	57	244	33	0	94	40	-
	Kuruman			-	1943	1907	345	283	3	36	272	23	4	36	39	-
CHC	Cassels	257	22	63	12	12	0	0	0	0	0	-	-	-	-	102
	Kagiso	726	145	264	38	37	0	0	2	1	5	-	-	-	-	130
	Kamden	170	23	59	11	11	0	1	0	0	4	-	-	-	-	87
	Loopeng	120	12	37	17	16	0	1	0	1	3	-	-	-	-	62
	Olifantshoek	0	0	0	48	48	0	3	0	0	8	0	-	0	0	6
Clinic	Bankhara/Bodul ong	247	38	53	0	0	-	0		0	0	-	-	-	-	90
	Bendel	98	25	39	1	1	-	0	0	0	0	-	-	-	-	31
	Bothetheletsa	78	8	22	3	3	-	1	0	0	0	-	-	-	-	41
	Bothithong	161	24	60	8	8	-	0	0	1	1	-	-	-	-	56
	Churchill	137	25	50	2	2	-	2	0	0	2	-	-	-	-	63
	Deerward	20	1	7	1	1	-	0	0	0	0	-	-	-	-	18
	Dingleton	81	16	31	0	0	-	0	0	0	0	-	-	-	-	19
	Dithakong	347	39	74	3	3	-	0	0	0	0	-	-	-	-	152
	Ditshipeng	88	12	17	0	0	-	0	0	0	0	-	-	-	-	48
	Gadiboe	102	29	40	1	1	-	0	0	0	0	-	-	-	-	55
	Gaothuse Winter Maroro	26	5	11	1	1	0	0	0	0	0	-	-	-	-	3
	Gasehunelo Wyk 5	12	1	3	0	0	-	0	0	0	0	-	-	-	-	10
	Glen Red	257	28	56	14	14	-	0	0	0	0	-	-	-	-	105
	Heuningvlei	135	18	37	5	5	-	0	0	0	0	-	-	-	-	47
	Jan Witbooi	338	70	137	1	1	-	0	0	0	0	-	-	-	-	107
	Kathu	196	36	65	-	-	-	-	-	-	-	-	-	-	-	19
	Katrina Koikoi	349	59	118	17	17	-	1	0	0	4	-	-	-	-	77
	Keolopile Olepeng	180	23	61	0	0	-	0	0	0	0	-	-	-	-	117
	Kuruman Clinic	235	38	76	-	-	-	-	0	-	-	-	-	-	-	40
	Laxey	72	22	31	2	2	-	0	0	0	0	-	-	-	-	31
	Logobate	81	19	31	1	1	0	0	0	0	0	-	-	-	-	50
	Manyeding	155	32	61	0	0	-	0	0	0	0	-	-	-	-	63

	Health facility	First ANC care visit			Delivery in facility				Maternal death in facility	Birth and Inpatient death						Mother postnatal visit within 6 days after delivery
	Name	1st visit total	<14 weeks	<20 weeks	Total birth	Live birth	C section	< 18 years		Still birth in facility	Live birth under 2.5kg	Inpatient death 0-7 days	Inpatient death 8-28 days	Inpatient death neonatal total	Inpatient death under 1 year total	
	Maruping	354	69	110	0	0	-	0	0	0	0	-	-	-	-	86
	Mecwetsaneng	45	3	17	0	0	-	0	0	0	0	-	-	-	-	22
	Metsimansti Wyk 3	11	1	3	0	0	-	0	0	0	0	-	-	-	-	8
	Mosalashuping Baicumedi	143	21	53	5	5	-	0	0	0	0	-	-	-	-	41
	Padstow	49	11	17	0	0	-	0	0	0	0	-	-	-	-	16
	Pako Seboko	301	64	113	0	-	-	0	-	-	-	-	-	-	-	24
	Penryn	39	6	15	1	1	-	0	0	0	0	-	-	-	-	15
	Perth	51	12	20	0	0	-	0	0	0	0	-	-	-	-	16
	Pietersham	100	10	20	3	3	-	0	0	0	0	-	-	-	-	58
	Rusfontein	21	6	6	3	3	-	1	0	0	0	-	-	-	-	11
	Seoding	602	101	218	0	0	-	0	0	0	0	-	-	-	-	173
	Tshwaragano Gateway	624	98	184	0	0	-	0	0	0	0	-	-	-	-	307
	Tsineng	213	31	58	2	2	-	0	0	0	0	-	-	-	-	112
	Tswalu	27	8	12	-	-	-	0	-	-	-	-	-	-	-	1
	Van Zylsrus	78	20	27	1	2	-	0	0	0	1	-	-	-	-	27
	Wrenchvill	254	60	95	0	0	-	0	0	0	0	-	-	-	-	81
Mobile	Kudumane Mobile 1	0		-	-	-	-		-	-	-	-	-	-	-	0
	Kudumane Mobile 2	0	0	0	0	0	-		0	0	0	-	-	-	-	0
	Kudumane Mobile 3	0		-	-	-	-		-	-	-	-	-	-	-	0
	Batho Pele Health Mobile 1	148	21	48	0	0	-		0	0	0	-	-	-	-	32
Total		7728	1312	2519	4140	4059	538	509	5	96	544	56	4	60	130	2730

5.4 Quality of services provided

The quality of care provided in health facilities, is critical for achieving the intended objectives. Despite the availability of evidence-based guidelines and tools, district have limited mechanisms to assess the quality of health care in all of its facilities. The quality of maternal, and child health care can be measured in terms of different but interlinked spheres such as structure or inputs (finance, material, human resources) needed to provide care; or processes (the activities in which these resources are used to provide care), and outcomes (the results of the activities) that eventually result in health impacts. However, the fact that there is a need for continuous improvement in care, often called for quality improvement, which in turn calls for continuous improvement to achieve improved health outcomes of mothers and children.

In their first antenatal care visit 7.92% pregnant women were seen by a doctor, while the majority 90.19% of pregnant mothers was seen by professional nurse/midwife and 1.13% both nurse or midwife and doctor. 72.83% of respondents indicated that during their antenatal care visit the provider did inform them about pregnancy related risk and danger signs. 79.85% pregnant women were consulted by the health care provider on proper nutrition during their pregnancy, and 90.04% pregnant women indicted that the health care worker counselled them about infant feeding during their antenatal care visit. Photograph five shows taking a blood sample for HIV test from a pregnant mother during ANC visit at a PHC facility.

Figure 5: Taking a blood sample for HIV test from a pregnant mother during ANC visit



Regarding the time spent in examination, during the first antenatal care visit with a doctor, nurse, or midwife, pregnant women suggested that for 36.15% respondents the time was less than 30 minutes, while for 48.46% respondents the time was less than one hour but greater than 30 minutes. 11.92 % respondents indicated that the time spent was less than two hours but greater than one hour. Only for 3.46% it was more than two hours. The fact that the majority of pregnant women having examination time less than 30 minutes, indicates the shortage of health professionals in facilitates to provide more time in diagnosis or management of the condition. Figure 6 shows ANC services for pregnant women at a PHC facility.

Figure 6: ANC follow-up visit for a pregnant woman



With regards to the place of delivery, 84.64% of deliveries took place in health facilities. 19.48% of the deliveries were Caesarean section and 1.2% instrumental and the remaining 79% were normal delivery. With regards to the place of delivery, 14.98% gave birth at a public health facility clinic, 69.66% at a public health facility hospital, 8.61% at a private health facility, 5.99% at home and 0.74% on their way to a health facility (inside in ambulance).

According to a facility service review report, none of the CHC facilities in the district have a full-time doctor, and are not providing 24 hours emergency service. More than a third of the clinics are managed and operated by one health professional due to a shortage of healthcare workers. In this study, one out of five (21.9%) pregnant women reported travelling to another facility for delivery because the facility they first visited was closed. 85.9% of mothers had received information on family planning options available for women in the postnatal period before they were discharged from maternity. 77.44% of mothers received family planning upon discharge. 87% of the respondents came to a health facility within 7 days of their discharge to see the health care provider for the six days baby check-up (early postnatal care).

In terms of reported HIV/AIDS status 95.8% respondents did test for HIV for this pregnancy. Only 4.2% of respondent women did not take the HIV test. 13.18% of HIV tested pregnant mother indicated that they were forced to be tested for HIV without their informed consent. 21.37% tested respondents were scared about the confidentiality of the HIV test result. 98.86% of tested mothers knew about the result of the test. Of which 17.69% were positive while almost all of them are on ARV treatment.

The DCSTs, district office as well as professionals including community members should prepare maternal and child health assessment and quality improvement tools to assess and improve the quality of care provided at all PHC, including the two hospitals in the district. Quality assessment however, must be preceded by staff and facility managers training on best practices, standard norms and procedures on key areas of assessment, to evaluate whether the intervention has been carried out as expected to reduce the existing problem.

5.5 Health facilities and their distribution

John Taolo Gaetsewe district has 2 public district hospitals, 5 Community Health Centres, 37 clinics and 5 mobile clinics for serving about 230 938 residents residing in the district. The two district hospitals are situated in an urban area within 17 km radius in the same local municipality (Ga-Segonyane) and on average 80 km apart from CHCs. The five CHCs are widespread throughout the district and provide pre-hospital care for communities. Currently none of the CHCs are providing 24/7 services, not working after working hours and weekends, Also they do not have a full-time doctor. Table 6 shows the distribution of health facilities in JTG district.

Table 6: Health facility distribution per sub-district and health area in JTG

Sub district	% of population	Health area	Clinics	CHCs	District hospitals	Make referral to Hospital
Gamagara	18%	Gamagara	5	1	0	Kuruman
Ga-Segonyana	42%	Ga-Segonyana	7	1	2	Both hospitals
Joe Morolong	40%	Kamden	9	1	0	Both hospitals
		Cassels	8	1	0	Kuruman
		Loopeng	8	1	0	Tshwaragano
Total	100%		37	5	2	

There are 44 health facilities of which 37 are clinics, 5 CHCs, and 2 district hospitals. The two hospitals are in the same sub district (Ga-Segonyana). Four of the five CHCs do not render a full package of health care due to a shortage of staff, while 39% of PHC facilities are functioning with one professional nurse.

The district is sub-divided into five health areas, namely: Gamagara, Ga-Segonyana, Kamden, Cassel and Looping. In each health area there is a CHC, which ideally should serve as a referral point for the clinics within the health area. However, four out of five CHCs do not render a full package of care, mainly due to a shortage of staff, the two hospitals serve as referral points for all facilities.

5.6 Health workforce availability and their distribution

At facilities, the skills, knowledge and competency of the health workers who manage patients at the level of intervention are crucial factors for good health outcomes. In JTG district, more than 85% of health professionals are nurses. As of November 2014, John Taolo Gaetsewe district had 783 healthcare workers distributed throughout the district. Out of this, 382 (48.7%) workforce account for health professionals, while the remaining larger group 401 (51.3%) are support staff such as data capturers, clerks, housekeepers, cleaners, laundry aids, linen store supervisors and assistants, artisans, groundsmen, general workers and assistants, food services aid, operators, chief executive officer, director, social worker, radiographer, therapist, dietician, tradesman, auxiliary services, driver, seamstress, porter, environmental health practitioner, accountant, head of clinic unit etc. Table 7 shows the number and distribution of health professionals per facility type. Nurses are the largest workforce within the district, accounting for 343 (89.7%) of all health professional in the district. There are 13 doctors and 2 specialist doctors working in the two district hospitals.

Table 7: Healthcare workers in JTG district

Facility	Specialist doctor	Doctor	Prof nurse	Staff nurse	Assistant nurse	Pharmacist	Pharmacist Assistant	Dentist	Dental Assistant	Other	Total
Hospital	2	11	77	25	61	3	4	2	1	183	370
CHC			28	4	13					28	73
Clinic			67	6	41					59	173
Mobile Clinic			3		4						7
Emergency services										82	82
District office		1	13	0	1	2	6	1	5	49	78
Forensic		1								6	7
Total	2	13	188	35	120	5	10	3	6	401	783

5.7 District Health Financing

Government funding and the annual rate of funding increase for health care services in JTG district were inadequate. There is no evidence-based allocation of resources. The historical ways of allocation of health resources between facilities was also inequitable across facilities, with the majority of resources allocated to town areas compared to rural areas. As a result, there is disparity in access to health services between urban and rural populations. Effort to provide good quality healthcare services at PHC facilities have been jeopardized due to lack of resources as well as misallocation. These resources include human resources for health, financial resources, infrastructure, information management and exchange during referrals, planning and monitoring. Districts are mainly funded from three funding sources. The majority of funding comes from a Government equitable share, which contributed 74.1% in 2012/13; 69.6% in 2013/14; and 69.2% in 2014/15. The second funding source is a conditional grant which accounted for 17.5%, 21.3%; and 22.4% in 2012/13; 2013/14 and 2014/15 financial years respectively. The remaining comprises earmarked funds. The total health budget for JTG district in 2014 was Rand 253,548, 000, which equals to R1249 per capita. Compared to the budget allocated for other districts in the province in the same year, the budget allocated for JTG in 2014 was the lowest in the province. Table 8 presents the district's budget allocation and growth for 2012/13 to 2014/15 financial years.

Table 8: Growth in district budget for 2012/13-2014/15 financial years per capita allocation

District	2012/13	2013/14	2014/15	2014/15 financial year district services expenditure per capita	
				Uninsured population	Total population
JTG	300 536 931	295 313 317	253,548,000	1249	1097

Table 8 shows that the financial growth was inadequate compared to the need for the growth in employment of human resources for health as well as provision of good health services. The JTG district health services expenditure per capita for both uninsured and total population for JTG district is the lowest in the province. In addition to this there is a huge difference between districts in terms of services expenditure per capita. Table 9 below indicates the district budget expenditure for the period 2010/11 to 2014/15.

Table 9: District actual expenditure trend for past five years

Programme	2010/11	2011/12	2012/13	2013/14	2014/15 (Budget allocated)	%
District Office	13774823	13580575	26911552	27693600	29132042	160
Clinics	62127307	65092779	59643659	59747651	27976219	87
CHCs	23225500	29304281	27725470	27976303	14074933	23
District Hospitals	127816069	115511584	116842914	120715287	71788192	53
Other Community Base	3710188	4809842	4122202	3645181	1531313	37
Nutrition	444872	239115	388852	388852	165016	27
Total	231098760	228538176	235634649	240166874	144667714	57

5.8 Client's satisfaction on services

Almost all of the pregnant women were satisfied with the quality of antenatal care which they received. 49%; 29% and 20% rated the quality of services they received very satisfied, satisfied and good respectively. This has a positive impact on the utilization rate of pregnant women to attend the recommended minimum of four antenatal care visits and as more clients are happy about the provided services, the proportion of pregnant women who attended antenatal care visits will increase. The median waiting time was 1 hour and 22 minutes (with interquartile range 30 minutes to 4 hours). Despite this, 49.43% of mothers displayed high levels of satisfaction with maternal and child health services, including the waiting time, clinical examination, and the attitudes of health personnel. However in the focus group discussion, supply side constraints, long waiting time and long distances to health facilities were raised as

major concerns. Proper functioning of a health facility and high-quality provider performance is required in order to reduce long waiting time. Figure 7 shows a happy ANC client and staff at a public health facility.

Figure 7: Staff attitude and client satisfaction



In this study, 97.28 % pregnant women were happy with the antenatal care they received. Only 1.95% felt disrespected by clinic or hospital staff during antenatal care. The median waiting time was 1 hour and 22 minutes (with interquartile range 30 minutes to 4 hours). Higher waiting time has a negative effect on the utilization of services as planned and achieving the expected outcomes of interventions. Despite this, 49.43% of mothers displayed a high level of satisfaction with maternal and child health services, including the waiting time, clinical examination, and the attitudes of health personnel. Regarding on the advice that mothers received on how to take care of themselves and baby, 51.55% of mothers agreed that the advice was excellent, 31.01% mothers rated it as very good, 16.28% rated it good, and only close to 1% mothers were dissatisfied or very dissatisfied. With regard to the understanding and respect that the staff showed towards them only 2% of the mothers were dissatisfied while the majority 49.81% of the mothers rated it as excellent, 30.27% very good and 17.62% good. Almost all 92.40% of the mothers indicated that in the future if they fall pregnant, they would come to the same facility for antenatal care services. Only 3.91% of the respondents say that they would not come back to the same facility. 92.4% respondents indicated that they would recommend

the health facility for antenatal care services to others. This suggest that the mother's satisfaction was significantly positive although most of the respondents indicated the short consultation time as a problem.

5.9 Health outcomes

Respondent mothers described their self-reported health status during this child pregnancy. With regards to the general health status of mothers, 62.03% mothers rated their health status as excellent, 16.92% very good, 17.29% good and less than 1% of the respondents reported that their health status was poor. The JTG's district MMR showed substantial fluctuation in the last five years. According to the National Committee on Confidential Enquires into Maternal Deaths (NCCEMD) report, in 2009/10 the MMR was 129.9 per 100,000 live births. In 2010/11 the MMR drastically increased to 435.3 per 100,000 live births. In 2011/12 the MMR fell down to 191 per 100,000 live births. In 2012/13 the MMR increased to 260.5 per 100,000 live births. The most recent confidential enquiry report by the committee for 2013/14 has reported that the high maternal mortality rate significantly slowed down to 93.2 per 100,000 live births. In a record review we conducted for the period 01January 2014 to 30Septemebt 2014, the MMR was 123.18 per 100,000 live births in the JTG district.

5.10 Focus Group Discussion

Two focus group discussions were held in different communities in the JTG district to supplement the individual questionnaires and facility record review on maternal and child health study in the district and provide recommendations on strategies to tackle the challenges and achieve better health outcomes. For each group 15-20 key participants were selected from the following 'groups.

- (i) Women who fully or partially missed reproductive health services
- (ii) High risk reproductive health groups which include adolescents, mothers who plan to give birth at home, late presenters to reproductive health, and those women who have unplanned pregnancies and women with a history of abortion.
- (iii) Traditional birth attendants.
- (iv) Healthcare service providers.

The focus group discussion points were framed to evaluate the availability, uptake of services and quality of maternal and child health services at all primary health care facilities in JTG district. According to the focus group participants despite the good benefits of early ANC visits; most women in the district do not perceive the significant health threats of late ANC visits. The women believes that it is in order to attend ANC when the foetus shows physical signs in the body. In addition to this some women seek ANC visits just to get The Road to Health Booklet as a method to give them access to deliver at a health facility.

“The focus group participants appreciated the role played by community health care workers. They are encouraging patients to use health care services, remind patients about the date to go to the clinic for a check-up, sometimes they assist patients to the clinic, they encourage patients to take their pills as well as educate them on government’s policy with regard to their health. In view of what I have said above, I think they are supporting the healthcare system in reaching the communities. However, some other participants suggested some of the community health workers complained about the long distances to visit a patients. They suggested that community health workers should be adequately trained and provided with some basic equipment such as Blood Pressure machines, and be allowed to do some of the services at the community level, with transport drop off facilities they could assist more patients. Patients often go to the clinic for routine check-ups”

“When a person comes to the clinic in the morning, the clinic is full of patients and pregnant women like to sleep, and when the one is asleep the nurses will help other patients. However, I am not saying they should not help others, may be just prioritize the pregnant women, it will be helpful if the waiting times can be reduced”

“The problem is that the clinics use a supermarket approach in providing the services, which means it is a first come first served. This leads to a long waiting time for pregnant women. Shortage of staff also contribute to this problem. I think the main problem is shortage of staff because if there is a clinic with about four or five nurses and enough space, one nurse will attend to children, one to chronic cases, another to family planning etc. the problem is you find one nurses at the clinic who has to perform about four or five services to the community. In our district there are many facilities operating with only a nurse who has to perform all the

services which include antenatal, family planning, chronic and also emergencies. On average one nurse has to see 35 patients a day but they often see more than that number daily”

Some facilities like Maruping clinic provide different services on specific days. There is a written notice at the clinic regarding the type of services that are provided on specific days. For example Monday and Friday are for chronic patients, antenatal care is on Tuesdays, while Wednesday is child immunisation day. However, whenever a sick person comes to the clinic at any time, he/she will be provided with services and will not be turned away.

“Our problem is even though there is a programme and also working hours, if a mother has some problems after working hours or during weekends she needs to go to other facilities. She has to pay R5 to get to the hospital”

Regarding the Emergency Medical Services,

“The ambulances take a long time to respond, and sometimes they do not even come. They also mentioned misconduct of some drivers as they request payment to take the patient to a health facility. Most focus group attendants indicate that the expensive price for transport is one of the factors hindering clients from accessing services, and many of them could not afford to pay for it. The roads are not in good order which makes it difficult to transport patients in emergency cases.”

Teenage pregnancy is more common in this district. According to the focus group informants, the main reason is peer pressure from friends and economic dependency. Some of the teens have not completed school, are not married and the support they are getting from the fathers is mixed. For instance:

“One of the teenage pregnant women explained, “When my pregnancy was began (at earlier months), he was there but recently I have no communication with the father as most of the time his phone is off and he is not responding to my calls. In the case when the child’s father is no longer able to provide me with support for any reason, my option will be to apply for the government child social grant, request my parents to support me and the child and to look for work.”

The other teenage participant responded, *“For me everything is still fine with this child’s father and he is still supporting me, although I had two more children from different fathers.”*

The fact that most of the teens are without an advanced education and lacking the skills needed to get adequate paying jobs, they often fall short financially lacking what is needed for raising their child. Often they look for child social grants which might be a burden for society as well as for the taxpayer from the time the child is born through to the age of 18. During the focus group discussion we observed teenage mother who was 13 years old and her mother was 27 year old.

Community health care workers indicate their challenges. *Some pregnant mothers are nor cooperative even though we provide them with health education. They don’t want to talk about when they fell pregnant, their delivery plan. Some of them deliver in another area. This is one of the challenges that we face in maternal and child health programmes.”*

Another problem is that there will not be anyone to help her once she has given birth, for some others it is related to traditional beliefs, whereby people do not want others to know when they are going to give birth. Some of them don’t even want people to know about their pregnancy which leads to late booking for ANC at the clinic.

Focus group participants suggest that improve mother and child health care services in the district, the following are critical: Expansion of clinics by incorporating accommodation for nurses, increase the number of nursing (staff), provision of pregnant women on treatment with food parcels, increase the CHCW’s stipend, re-opening of the nursing college in the district to improve healthcare workers from the district. Above all, the participants stressed the shortage of staff as the main problem along with the poor roads, and socio-economic conditions of the district that need more attention. There are clinics in most of the areas, but you find only one nurse working which increases the workload. The CHC’s close at 4pm and do not operate on weekends. Whenever there is an emergency service, it is a challenge, meaning that those who need medical attention after 4pm and on weekends have no access except at the two district hospitals.

According to the healthcare providers,

“Although there are so many people who studied nursing for this district, they do not come back to the district. In this regard, the human resource procedures need to be improved. Nurses work too long with no salary increases whereby they all want to leave, they also complain about the OSD. The shortage of staff in all health facilities in the JTG district coupled with the HIV/AIDS and TB patients who are creating an additional workload on existing staff. As a result provision of optimal services to ANC clients and postnatal care to mothers and children are a challenge. The usual number of patients per day is between 5 and 10, but on antenatal days, the staff attended to between 10 and 20 women. When the doctor visited the facility, the number of patients swelled to between 40 and 60. On average the nurses spent up to 30 minutes on a consultation, the doctor spent about five minutes with each person. More training of Ward Based Outreach Teams (WBOT) recommend to assign them to a particular facility to support the community work effectively and efficiently.”

6 Discussion

This study shows maternal and child health programme in the JTG district has shown some progress in reducing, in facility maternal mortality rates, in the last two years. The district's performance compared to other districts within the province shows increased achievements that enable closing of the historical gaps. These achievements could be attributed to increased reproductive health care service utilization by clients, increased facility deliveries, increased HIV/AIDS detection and ARV treatment initiation for HIV positive women, provision of comprehensive counselling services, more PMTCT success outcomes, and improved service delivery efforts within the ambit of the available resources. Despite the success stories, health outcomes in the district are still adversely affected by many challenges related to the health system supply side, the socioeconomic nature of the district, and client side problems.

Maternal mortality. The fluctuation in facility MMR in the JTG district is a concern. The result from this study for the period 01 January 2014 to 30 September 2014, indicates the MMR had 123.18 per 100,000 live births and it seems that there may be more in-facility maternal mortality. The slowdown trend (93.2 per 100,000 live births) for 2013/14 financial year may be reversed for 2014/15. Throughout the World high maternal mortality is a significant challenge². Studies indicate socioeconomic related avoidable health inequalities still persist in many low and middle income countries^{12, 19, 20}. In addition to this, the availability of vital statistics based on good quality medical certification of the causes of death are extremely challenging^{2,21}; as maternal and child deaths are caused by a multitude causal factors^{20,21,22,23}. These factors include population level factors and individual level factors.

6.1 Population (structural) level factors

Population levels or structural factors include both the district's physical conditions and health facility factors. Relatively poorly developed infrastructure, low population socioeconomic conditions, poorly coordinated health systems, facility conditions, poor implementation of policies and guidelines and insufficient human resources for health care as well as inequity in their distribution, are stumbling blocks for accessing good quality reproductive health services. This results in poor maternal and child health outcomes that are below the provincial and National averages. Although, in recent years there has been a growing interest to identify and address population level, structural factors, nonetheless this was not adequate.

Disparities in access to good quality health care: In recent years a number of improvements have been made to increase access to health facilities and health care services. The number of health facilities in remote and rural areas have been increased, and maternal and child health services are provided free of charge. Despite these improvements, inequity in the distribution of facilities and human resources, and non-availability of services (due to shortage of healthcare workers) has been hindering effective service utilization. This is a potential cause of poor health service utilization rates and disease occurrences between geographically defined (rural and urban) population groups in the district²⁴.

The two district hospitals in the JTG are situated in one local municipality/sub-district (Ga-Segonyana), 17 km apart from each other. All CHCs that refer patients to these hospitals are located on average, 80 kms distance from the hospitals. Studies indicate the detrimental effect distance has to access to healthcare facilities and mortalities^{25, 26}. A third of the health facilities in rural areas are managed and operated by only one health professional. Not all CHC facilities work according to the standard norms in their size and are not providing best possible health care closest to the client's home with 24/7 hours of care services. Availability of good quality care at accessible distances along with adequate healthcare workers are crucial to make an impact on the maternal and child health outcomes, and also to create client's confidence in public health facilities. In general, the supply of facilities with qualified healthcare professionals is not keeping pace with demand. Some of the reasons could be fewer professionals are interested to work in rural districts; an ageing health workforce and many reaching retirement, as well as a shortage of budget as an incentive.

Low level of socioeconomic development: Many factors outside the health sector affect the health of individuals and communities. These factors include the living environment, the state of residence, level of income, education level, type of employment, relationships with friends and transport^{19, 27}. These factors have a considerable impact on health and outcomes of health programmes by directly or indirectly affecting access and use of health care services. Low socioeconomic conditions correlates with poor health status. Social determinants of health a significant impact on health, both at the level of individuals and communities. For instance, education, employment and high incomes, increase access to goods and services beneficial to health, such as health care, better food and housing, and preventive health measures. This suggests people with a higher socio-economic status generally enjoy better health and live

longer than people with a lower income. In our study, for 66.6% respondent mothers, the total monthly income was less than or equal to one thousand Rand (R1000.00). Close to half (44.69 %) of the mothers reported they had their first baby before the age of 20 years. 94% teens were unemployed. Most of the respondents had secondary education 68.89%. In focus group discussions, poor road conditions, and costs of travel to a facility were indicted as one of the barrier factors for accessing healthcare services. According to^{28, 29} it is possible to tackle Health Inequities through correcting the public health practices.

Human Resources for Health. Without adequate and quality healthcare workers, it is difficult to transform the health system and produce the required health outcomes. The district faces several challenges related to a healthcare workforce including lack of adequate human resources, poor strategies to get the right health workers, in the right place, with the right skills mix for doing the right things, inequity their distribution and staff retention. The availability of healthcare professionals and their even distribution among health facilities within rural and urban public facilities, still remain a significant challenge. In addition to this, with the current staff establishment, more than half the staff are non-health professionals. There is a serious shortages of specialist doctors, doctors, nurses, midwives, and pharmacist which suggests the need for urgent attention in this area. This is critical as most of the other challenges in the district, such as waiting time, effective referrals, client satisfaction, volume and quality of services available or rendered at facilities are directly linked to the availability and quality of human resources for health in the district.

The transformation of the South African health system towards a district-based system driven by the Re-engineering Primary Health Care (PHC) approach has at its core objective, efficiency, accessible and equitable healthcare services for all³. The National Health Act (Act 61 of 2003), affirmed the district health system as the main vehicle for the delivery of primary health care services. Accordingly, as defined by norms and standards, community health centres should provide a package of comprehensive services 24/7 with a full-time doctor. However, none of the CHCs in JTG district meet with the above mentioned requirements. However, because of the geographical landscape and uneven distribution of the health facilities throughout the district, effective referral system based on the PHC principle, and dedicated patient transport system between facilities to provide emergency care, has been a challenge. As a result, contrary to the service delivery platform (clinic, CHCs, district hospitals, and regional hospital) patients are allowed to receive treatment by passing the next health entry point; i.e.,

from Clinic to CHC then to a district hospital. Inappropriate hospital admission and length of stay, either due to lack of arrangement and limited knowledge of care arrangement, is one of the sources of cost escalation and inefficiencies.

At facilities, the skills, knowledge and competency of the health workers who manage patients at the level of intervention, is a crucial factor for good health outcomes. In the JTG district, more than 85% of health professionals comprises of nurses. This is in line with the province, as well as in the entire country as well. A limited number of specialist doctors, doctors, pharmacists, and dentists are providing health services in the district. This presents a complex challenge in addressing the needs of the rural communities in particular. For instance, although most clinics and community health centres are distributed within high density population areas, not all community health centres offer a 24/7 hour service due to shortage of health professionals. Similarly, half of the facilities with vast catchment areas are staffed by only one nurse, and about one third of the facilities are staffed by two nurses, making health care practically inaccessible for many mothers and children in the district. Table 10 presents the distribution of health care workers within the province along with the estimated population to take care of.

Table 10: Health professionals per 10,000 for the public sectors

District	Estimates of population			Health professionals per uninsured population per district						
	Total population	Uninsured population	% uninsured population	Specialist doctor	Doctor	Prof nurse	Staff nurse	Assistant nurse	Pharmacist	Dentist
GTG	230938	202846	87.8%	0.098	0.64	9.26	1.72	5.91	0.246	0.14
Francis Baard	379352	324950	85.6%	0.12	0.92	7.74	0.95	4.45	0.8	0.4
Namakw a	118450	92938	78.4%	0	2.15	14.20	4.08	10.22	0.75	0.75
ZF Magcawu	244154	203789	83.4%	0.14	1.32	10.48	2.40	10.3	0.9	0.24
Pixley Ka Seme	190019	160052	84.2%	0.12	1.24	11.3	1.18	8.87	0.37	0.24

Mid-year population for 2014 according to Stat SA is 1,116,700

In order to meet the health needs of the communities, a well-trained, highly skilled and competent health workforce is critical to provide and achieve good quality health services for all. Although none of the districts in the province have adequate human resources for health,

comparing the total healthcare workers and their distribution within the province indicates that JTG district has the second lowest health professional share except to the Namakwa district. Improving and sustaining a successful maternal and child health programme increasingly relies on the availability of relevant and quality services for clients in a continuation form. The analysis of the response from respondents and focus group participants are the most common reasons why respondents do not effectively utilise services at clinics and CHCs where there are inadequate human resources at facilities and distance to health facilities. Key components of intervention along with adequate healthcare workers must be available and accessed by mothers and children to achieve the desired health outcomes.

If we consider the number of health professionals per district per uninsured population (who are dependent on public health facilities), the JTG district shows the lowest share of health professionals for most of the categories. Table 11 shows distribution of health care workers within the province and per district.

Most of the health workforce in the district are ageing. Yet there is no replacement plan or the nursing college is not producing adequate professionals as required. The district need staff to work on the ground. Because of a shortage of staff, people are working part time in maternity ward and along with other duties. On the other hand, professionals are leaving the district because of workload, poor retention system, problem of leadership, no overtime work pay, lack of transport, high cost of living, and slow reaction from managers to solve the problem.

Table 11: Distribution of healthcare workers within the province per district

District	Specialist doctor	Doctor	Professional nurse	Staff nurse	Assistant nurse	Pharmacist	Pharmacist assistant	Dentist	Dental assistant	Other	Total
JTG	2	13	188	35	120	5	10	3	6	401	783
Francis Baard	4	30	242	31	111	26	19	13	12	585	1073
Namakwa		20	132	38	95	7	5	7	4	318	626
ZF Magcawu	3	27	212	49	210	19	8	5	3	603	1139
Pixley Ka Seme	2	20	182	19	142	6	8	4	6	567	956
Total	11	110	956	172	678	63	50	32	31	2474	4577

The district does not have a MCWH coordinator. Staff are not interested to act on the post because there is no payment for acting a post. Even if the post advertised, the priority is not given to the one who was acting on the place of that person. There is also some confusion

between the roles of DCSTs and health area managers, particularly in school health, vaccination and WBOT. Most of the staff have the necessary training, however translation of knowledge into practice is the bigger challenge.

Human resources shortages, would lead to heavy workload, low staff morale and early retirements, more waiting time and poor public confidence in public health facilities. Thus developing a coherent plan for human resources based on the Re-engineering policy strategy is needed in all facilities and Districts of the Province. This should include correcting of the maldistribution of health care workers as well as developing an institutional capacity for planning and management of human resources for health. Figure 8 shows Community health care workers and facilitators/coordinators training for the study.

Figure 8: Community health care workers and training facilitators



One way to alleviate human resources for health challenges is strengthening the provincial nursing college. This includes more skills development of new qualifications aligned with the needs of the province. However, addressing the current challenges of the college's limited capacity for intake, and the number of successful graduating students from the enrolled students for the programme, is critical.

Table 12 indicates trends in nursing and midwives uptake and graduates for the past four years from 2010/11 to 2013/14 of the provincial nursing college. Training and human development in health fields is crucial for the addressing the human resources for health challenges.

However, the college has a limited number of uptake capacity as well as few successful graduates from the programme was very low. There is a need to fully capacitate the nursing college so that it can effectively lessen the health care workers shortage challenges in the province.

Table 12: Uptake and number of graduate from provincial nursing college

Financial year	Number of Uptake			Number of Graduates		
	Nursing	Midwives	Total	Nursing	Midwives	Total
2010/11	88	26	114	67	-	67
2011/12	60	18	78	53	-	53
2012/13	91	20	111	-	-	-
2013/14	60	22	82	9	36	45

17.69% of respondent mothers were HIV positive. HIV/AIDS is one of the major causes of maternal and child death in the district. In antenatal care visits, pregnant women were given the choice of an offer for HIV test. Almost all had to take up the offer. 98.8% of tested mothers know the results of the test. HIV positive mothers were told to start ARV therapy after consultation. This suggests that the comprehensive services which include HIV/AIDS problem diagnosis, management and treatment, are in place.

Coordination of efforts require exchange of data which include retrieval of health information about consultations conducted elsewhere; documentation of medication and compliance; problem lists/ problem-orientated medical records; and population and individual preventive care. Most of the PHC facilities in the JTG district did not have a landline telephone, erratic internet connections, a lack of and personal travel. They did not have ready access to supervision about problem cases. Although a good data management system is critical for planning and evaluation of performances, its role for effective referral system and contribution to quality of care issues, tended to be ignored as not being adequately funded. Although statistics on maternal and child data were collated by all facilities and there is a provision support by district office, often information that existed at district office (DHIS) differs from the facilities. This suggests all not information was freely disseminated, scrutinized and captured.

The district faced many supply side challenges to provide quality maternal and child health services due to lack of adequate human resources for health, fair distribution of health facilities, lack of budget, inadequate managerial capacity, as well as the burden of diseases and other socio-demographic factors including the dynamics governing the district landscape. For instance, the sparsely distributed settlements and poor rural roads and socio-economic development of the district were accountable for cost escalating to provide good quality health services in the district. According to³⁰ health services are regarded as quality, if it is achieved, the desired objectives will be met in the most efficient and effective manner, with the emphasis placed on satisfying the client. Quality of services is intrinsically linked with a health service that is acceptable, accessible, efficient, effective, safe, cost savings and that's continuously evaluated and upgraded. In the literature it is stated that without adequate human resources for health, equipment, quality of client-provider interaction, equity, acceptability, comprehensiveness of care, and continuity of care and follow up and support to health care providers it would be challenging to achieve better health outcomes³¹.

First, from policy level, maternal and child health issues are among the highest policy priority and according to the policy, casualty and maternity services are supposed to be available as 24-hour services. In addition to this the policy states PHC facilities should provide free health care which is available in all public facilities for children under six, and pregnant mothers. This indicates that antenatal care, delivery services, contraceptive services provided, free of charge in the public facilities. The health policy is in line with what WHO recommended to Government's maternal and child health programme utilization encourages pregnant women to attend the recommended number of ANC visits.

Ward based outreach teams (WBOT). In districts, like the JTG, that experiences serious staff shortages, training village health care workers to perform tasks such as vaccines, community mobilization, education on ANC and prenatal care, and to care for chronic diseases like AIDS etc, is a good strategy to curb the health professionals shortage gap. Training and paying village health workers also creates job opportunities for the poor. However, their challenges such as working conditions, large areas coverage, inadequate and non-timeous salary payments, poor training and supervision needs to be addressed.

Waiting time and client satisfaction: The median waiting time was 1 hour and 22 minutes (with interquartile range 30 minutes to 4 hours). Despite this, 49.43% of mothers displayed a high level of satisfaction with maternal and child health services, including in the waiting time, clinical examination, and the attitudes of health personnel. However in the focus group discussion, supply side constraints, long waiting time and long distances to health facilities were raised as major concerns. Proper functioning of a health facility and high-quality provider performance is required in order to reduce the long waiting time.

The client satisfaction level also suggests the utilization of services and the associated outcomes of different interventions. Monitoring systems aimed to improve quality of care as well as detecting its deterioration through the use of client satisfaction questionnaires^{31, 32}. In this study, clients were asked to rate their satisfaction level with the services that they received from the public health facilities. Almost all pregnant women were satisfied with the quality of antenatal care which they received. 49%; 29% and 20% rated the quality of services they received very satisfied, satisfied and good respectively. This has a positive impact on the utilization rate of pregnant women to attend the recommended minimum of four antenatal care visits and more, as more clients are happy about the provided services the proportion of pregnant women who attended antenatal care visits will increase. Studies indicate waiting time is a significant predictor of patient satisfaction and intent to return to the same facility for additional or future health care³³. In this study, the average waiting time was less than one hour. Close to half (51.28%) of the clients found that the waiting time was less than one hour. Long waiting time was associated with the lack of professionals in the facility together with the unavailability of equipment which contributed to increasing the time to wait at the facility. Previous studies highlighted the importance of health facility resources as a key component of the quality of health care³⁴. Supply side constraints such as inadequate healthcare workers, lack of medical equipment negatively affect the quality of care provided and the utilization of health care services.

In addition to this, medical outcomes are regarded as quality of services and linked with the provider's technical competency and behaviour towards the patient, particularly respect and politeness³⁵. Patient satisfaction is a useful measure, and provides a direct indicator of quality of care. In this study, only 7.92% of clients were assisted by doctors during delivery. This suggests that pregnant women in the JTG public health facilities could not get doctors available

for their healthcare needs. In general health services delivery platform in the district is nurse based. The shortage of health workers, particularly doctors was perceived as a challenge for many years which is significantly associated with all the other poor satisfaction levels of indicators for poor quality of care. Only 13 doctors are available for the entire JTG district. Lack of healthcare professionals was pointed out as most important causes of users' dissatisfaction.

Inadequate funding: How health systems are financed largely determines whether people can obtain needed health care^{36, 37}. The available resources that are devoted to health and the way it is used has direct effects on both the care society can get and its quality³⁸. The economic classification of funds for 2014 financial year indicate 53.5%, 38.5% and 8% was spent on compensation of employees, for goods and services, and for others services respectively. The proportion of total district expenditure on district hospitals was 53.6%, higher than the provincial average, this could be associated with the vastness of the district. The proportion spent on Primary Health Care (PHC) was 24.6 %, while on clinics 12.7% was spent. The proportion of the health services district budget spent on district management was 7.1%. If there are not adequate provisions ensuring a basic level of health coverage, some people may not have access to good quality of care. The district budget is well below the required level to achieve its policy mandates and impacts on sustainability on the health of the community it cares for. There is no evidence-based allocation of resources. Government funding should be sufficient, predictable and long-term³⁸. Resource allocation should be evidence-based so that the district can determine where and how much of the allocated resources reach each facility and programme interventions.

The district health budget is not adequate to cover the delivery of good health services in the district. The allocation is not evidence-based taking into account health service delivery costs in geographically dispersed and the small number of community settlements. Per capita overhead based allocation methods may not adequately address the cost associated with geographical nature. In this situation, unit costing of delivery of health services in geographically dispersed and small communities, it would assist the department to estimate the true costs of its resources need to deliver good quality healthcare for all. Table 13 presents the growth in district budget compared to four districts within the province.

Table 13: Growth in district budget for 2012/13-2014/15 financial years per capita allocation

District	2012/13	2013/14	2014/15	2014/15 financial year district services expenditure per capita	
				Uninsured population	Total population
Francis Bard	427 238 192	362 377 711	413 344 000	1272	1089
JTG	300 536 931	295 313 317	253,548,000	1249	1097
Namakwa	193 989 031	223 931 550	258 823 000	2784	2185
Pixely Ka Seme	193 989 031	316 147 334	326 212 000	2038	1716
ZF Magcawu	217 282 516	177 629 507	254 598 000	1249	1042
Total	1 377 573 532	1 375 399 419	1 594 139 000		

Cost-effective use of hospitals and primary health care services. Not all referrals were based on the PHC Re-engineering principles. Health problems that should be addressed at primary health care level have been managed at hospital level, leading to additional work load on hospital staff. Effective referral system should be established at all levels of healthcare to ensure that client's receive the best possible care in a cost-effective way. In the JTG district, healthcare worker shortages coupled with a concentration of technologically advanced equipment in certain facilities has resulted in an increased demand for referral to health facilities and services at higher levels. On the other hand, the growing referrals to larger facilities, can place increasing pressure on existing staff and services³⁹. This in turn is affecting the cost-effectiveness of the health services.

The presence of a good physical infrastructure is a key requirement for providing quality of services and the efficient utilization of resources. Conversely, inadequacy in physical infrastructure results in escalating operational costs and unsatisfactory results. Health facilities in the JTG district are exposed to numerous problems related to poor physical infrastructure. For instance, the poor state of roads, unreliable supply of water and electricity to PHC facilities, shortage of telephone lines, IT are commonly experienced by facilities. Poor infrastructure makes services more expensive than corresponding services provided where there is adequate infrastructure. Poor infrastructure is a key factor responsible for the poor quality of services. The physical infrastructure needed by communities is too poorly developed in the district to meet the growing health demands. For instance, the majority of focus group discussion

respondents have stated that poor infrastructure was one of the major constraint to access health care services timeously. Gamagara and Joe Morolong meet the norm as far as the population per PHC facility is concerned, whereas there is a need to construct more PHC facilities in Ga-Segonyana.

According to the literature, for utilization to be effective, each person who wishes to use health services should have access. This includes factors that facilitate or hinder efforts to reach health care services, such as geographical accessibility based on distance between the residence of clients and the provision of services. For instance, in this study for 30.71% of respondent mothers it takes less than 30 minutes from their residence to the nearest healthcare facility where child births are attended. For 39.33% respondents, it takes between 30 minutes and one hour. For close to one-third of the respondents it will take more than one hour to the nearest healthcare facility where child births are attended. Close to half (48.6%) of the respondent mothers used ambulance services at onset of labour to get to the health facility where the delivery took place. While 24.9%; 14.18%, 7.6% and 3% used own car, hired car, taxi, bus or walked respectively to the facility. The actual capacity of health facilities to provide services. Since maternal and child health services are free the economic accessibility linked with the cost of services at public health facilities are minimal irrespective of individual's socioeconomic status. Hence the effect of the free health care intervention for maternal and child health services is expected to boost utilization.

Several dimensions of access can be measured such as geographical accessibility based on the distance between the location of users and the provision of services. In this study, 21.12% of respondent mothers have to be referred from a clinic to a higher level of facility such as community health care or hospital for continuity (longitudinally) of care. With regards to the place where they were referred to continuity to management of care over time indicated Kimberley hospital, Kuman hospital, Tshwaragano hospital, Barkley hospital, Kagiso Health Centre, Maruping, Batlharos and others. Although, this suggests that healthcare users were provided uninterrupted healthcare services over time, there is little evidence on the notion of longitudinally and effective referral as equal numbers of the clients that used other facilities were due to the nearby facility being closed. For instance 21.09% of pregnant mother have to go to another facility for delivery because the first facility they visited was closed. The fact that all of the PHC facilities are not providing 24/7 services in their communities, geographical inaccessibility for comprehensive care is significant. Maternal and child health services

utilization can be assessed from two perspectives: the patient's or the service provider. The patient is subjective, because it is based on patient reported services. The second perspective is more objective because it is based on the volume of services provided by health care workers to the patient. The research community relies heavily on measures of healthcare utilization from surveys, to understand health seeking choice behaviour and to evaluate interventions and design improved strategies. Such measures are known to suffer from recall problems but there is limited evidence as to whether the method of data collection affects evaluation findings⁴⁰.

Dedicated EMS. Given the health facilities condition, and their locations as well as the geographical vastness of the district, the lack of a dedicated inter-facility patient transport system, obstetric ambulances and EMS transport system are impeding rural communities from accessing the necessary care timeously in a cost-effective way. Capacitating EMS for transporting patients who are not able to transport themselves, providing out-of-hospital acute medical care to those in need of urgent medical care at the next higher level of care (or where service is available horizontally), while providing preliminary medical care at the scene and during transport is critical.

Close to half (48.6%) of the respondent mothers used ambulance services at onset of labour to get to the health facility where the delivery took place. While 24.9%; 14.18%, and 7.6% used their own car, hired car, taxi or bus respectively to the facility. For 30.71% of the respondent mothers it will take less than 30 minutes from their residence to the nearest healthcare facility where child births are attended to. 39.33% of the respondents indicated that it will take between 30 minutes and one hour. For close to one-third of the respondents it will take more than one hour to the nearest healthcare facility where child births are attended to.

Coordinator for MCH activities. There is no dedicated MCH coordinator in the JTG district. The MCH coordinator should be employed and the coordinator should be responsible for the district maternal and child health activities, including working closely with the DCSTs, health area managers, facilities and different stakeholders including Government sectors to prioritize competing priorities and meet deadlines. This critical post is vacant and there is no dedicated person to provide direction and support in maternal and child health programmes.

Accommodation for rural facility health care workers. Poor working and living conditions of healthcare workers, particularly in rural facilities has been negatively impacting on health

facilities' operating hours. The need for safe accommodation was raised as a key concern by healthcare workers in rural facilities. Addressing this problem would encourage health workers to extend their stay at rural health care facilities and improve the operational hours of facilities. Currently because of lack of accommodation health care workers daily travel to town where they live. Meeting these basic needs will encourage retention of health care workers in rural areas.

The District Health Information Software/system (DHIS). Effective health data management plays an important role in improving the health systems and performance of an organization. This needs collecting, analyzing, interpreting data allows health care management teams and professionals to identify where systems are falling short, to make corrective adjustments, and to track outcomes. Reserach^{41, 42} recommended health information management as one of the building blocks of health systems, as well as to strengthen, it is critical to improve health outcomes. In the JTG district, the quality, accuracy and timely use and communication of information is poor. Contradicting information is reported from the facility and the district on crucial indicators. As health information data is vital to planning, monitoring and evaluation of the effects of intervention, adequate attention needs to be given to district information system (software). Electronic record keeping in all facilities, continuous quality assessment and timeous reporting of data could improve these challenges.

6.2 Individual level factors

At individual level, utilization of the maternal and child health services, associated with age of pregnant women, socioeconomic status and partner's support were significantly associated with good maternal and child health outcomes. We argue that there is a need to design a programme that can assist pregnant women who live in low socioeconomic status. Promote awareness of the issues related to poverty and pregnancy. For instance, the environment or neighbourhood area where a pregnant mother is living, the poverty level, unemployment, low level education, inadequate support from parents and the father of a child, are influential factors for utilization of maternal and child health services. Poor individual conditions lead to poorer health as unhealthy behaviour has direct, harmful effects. Understanding the issues will create a supportive environment as well as enhance the delivery of services to pregnant women and improved health outcomes.

Late ANC booking. In a study made by⁴³, the outcome indicates that late antenatal booking was associated with complications of delivery. And early booking significantly improved pregnancy management and reduced morbidity and complications in pregnant women. Achieving a high early ANC booking rate has been a big challenge in the JTG district. According to WHO all pregnant women should have at least four antenatal care (ANC) visits, as a minimum, and be spaced at regular intervals throughout the pregnancy. It also recommended the early ANC booking for many of its benefits to the pregnant mother throughout the pregnancy and having a problem free delivery. In this study most (74%) pregnant women booked ANC visits after 12 weeks. In the focus group discussion we were informed that most mothers know the benefit of early ANC booking, however due to cultural beliefs they prefer to delay the ANC visit until the pregnancy is physically visible. Community based health education programmes are urgently required to change this harmful cultural belief. Measures should be taken to ensure an earlier entry into antenatal care, particularly for rural women, and to facilitate access to antenatal services delivery plan.

Various studies including WHO have indicated the importance of early antenatal visits for early detection of potential complication in pregnancies, testing for syphilis, HIV and related dangers and consequently to take the necessary steps for prevention, and treatment of complications to make delivery arrangements. The antenatal care visits give the opportunity for health workers to identify and treat the majority of (potential) health problems that pregnant woman may experience during their pregnancy and delivery. Accordingly, most researchers, including the WHO and the Department of health recommends pregnant women to begin ANC as early as possible in their pregnancy, preferably before 14 weeks of gestation, and at least to attend a minimum of 5 antenatal visits during her pregnancy.

This study examined the maternal and child health programme effectiveness in the JTG district, specifically focusing on indicators accessibility of the services, service utilization by pregnant women, quality of health services provided, availability of systems to provide and achieve the intended health outcomes, client satisfaction and health intervention outcomes. In this study, 96.15% of pregnant women attended antenatal care during their pregnancy. Of which 90.15% pregnant mothers attended their first ANC visits at a public health facility, while 5.68% in a private health care facility and 4.17% used both public and private health facilities. However, in this study only 41.76 % of pregnant women attended their first antenatal care visit before 12

weeks of their pregnancy. Both WHO and National Department of Health recommend early ANC visits because of its many benefits to pregnant women and for good health outcome⁴⁴.

Contrary to this, the majority (58%) of pregnant women visited health facilities after the pregnancy was more than 12 weeks. The antenatal first visit before 20 weeks was 74.73%, while ANC first visits after 20 weeks is close to 25%. 60.64% of pregnant women received antenatal services at least five times or more during their pregnancy. Conversely, close to 40% of pregnant mothers attended less than 5 times. 80.2% mothers did see the healthcare provider for six days baby check-up (early postnatal visit) within seven days (one week) after discharged from maternity or delivery. Close to one-fifth (19.8%) mothers visited a healthcare provider only after a week of discharged from maternity.

44.69% of respondent mothers indicted that they were teenagers (less than 19 years old) when they had their first born child. In this study, 18.32% of pregnant women were teenagers when they come to six weeks immunization. The fact that mother service satisfaction level is high i.e. 97.28 % pregnant mother were happy with the antenatal care they received, this suggests that the low uptake of ANC visits before 12 weeks could be associated with teenage pregnancies. Out of marriage teenage pregnancy often has a social stigma and discriminations. As a result, teenage pregnant women may find it difficult to disclose their pregnancy in the early stage of pregnancy, and they might delay their ANC visits for reasons associated with privacy and lack of confidence in the staff of the facility.

Teenage pregnancies. Even though the teen pregnancy rate has been on the decline in recent years, more than 18% respondent mothers were teens in this study. The fact that 94% of them are unemployed, and 84% are single mothers indicates teen parents have greater societal and economic problems. Teenage pregnancy is regarded as a high risk pregnancy, and hinders the teen's ability to grow and develop to their full potential. Studies indicate teenage pregnancy could lead to depression, alcohol or tobacco use, unprotected sex that can jeopardize not only their health, but also their children's⁴⁵. The social and economic costs of teen pregnancy and childbearing are often high, and these costs can be both immediate and long-term for teen parents and their children. According to studies more teenage pregnancies occur in third world countries⁴⁶. Teenage pregnancies are reported in focus group discussion as the most important public health problems of the district that they need urgent attention by taking steps to better protect young girls from associated risks.

7. Conclusion and Recommendations on the Way Forward

7.1 Conclusion

Maternal and child health outcome influenced by multitude factors which include individual, supply side, socioeconomic and physical factors. In JTG district, service utilization indicative of better maternal and child health outcome has increased in recent years. For instance, in facility maternal mortality figures has declined somewhat in the past two years, but adherence to the standards and good clinical practices based on the PHC Reengineering approach are still remain a challenge. Decisions and utilization of health services utilization obviously influenced by the characteristics, behaviour status of each pregnant mother (income, education, employment, living environment and residential conditions), health facilities conditions such as adequate resources (human resources for health, equipment and supplies), as well as the socioeconomic and cultural factors. Addressing the challenges in each area support improve maternal and child health outcome success rates and reduce mortality rates from adverse effects in the district.

According to the World Health Organization, health care facilities, along with systems, adequate human resources for health, equipment, funding and good planning and administration skills are essential components of the service platform required for the delivery of good quality health service. World Health Organization outlines that six (6) building blocks (components) should operate in harmony to ensure an effective, acceptable and good quality health service. These include, leadership/governance, a well-performing workforce, a well-functioning information system and Infrastructure, a good health financing system, equitable access to medical products and technologies, and safe, effective and quality health services. Overall, provision of good quality health services in the JTG district are limited in all the above areas. This, coupled with the geographically widely dispersed population settlement; increases in the unit cost of delivery for health services.

7.2 The way forward

The recommendations highlights areas where the department needs to put in efforts to improve the maternal and child health outcome in the district. The study recommends:

1. **Pro-poor resources allocation.** Government health resources allocation and expenditure should be significantly be pro-poor on average. Thus, there is a need to

undertake a more intensive restructuring of the health system within the district as well as the province for providing quality health care that is accessible to all, and is aligned with the Re-engineering Primary Healthcare policy direction.

2. **Evidence based practice.** To bring the desired health improvement, planning must be evidence based. Evidence based planning and implementation should strive towards strengthen of the health systems, improving the work plans, the financial and non-financial resources use for the improvement of health outcomes.
3. **Collaboration.** More integration and collaborative work between health facilities and communities needed to improve awareness about on the reproductive health, reduce teenage pregnancies, and services uptake to achieve better maternal and child health outcomes.
4. **Maternal and child health.** Government policies, guidelines and recommendations on maternal and child health should be implemented effectively.
 - Policies and standard procedures should be available in all facilities and to health care workers. Provision of training opportunity on new strategies and best practices to all staff and stakeholders is critical in order to have a shared vision in the delivery of maternal and child health services.
 - All the components of maternal and child health care services should be promoted and provided in all PHC facilities in a coherent and integrated manner with the national priorities.
 - DCST must work closely with the district management team and facility managers to ensure the adherence of policies and procedures, with a particular emphasis to rural and underserved areas.
 - The full Primary Health Care Re-engineering programme with the three streams: District Clinical Specialist Team, Ward based PHC outreach teams, and a school health programme must be established.
5. **Disparities in access to good quality health care.** There should be an effort to promote equity in maternal and child health services through providing good quality maternal and child services that are available at a reasonable distance.

- Maternal and child health care programmes in both urban and rural facilities should include key interventions to be delivered by district health services.
 - All facilities should communicate the type of services that are available to clients and their working hours.
 - Transport should not be a barrier to access these services.
6. **Increasing health facilities.** Disparities in health resources allocation and health facilities distribution exist between health areas (urban and rural). Gamagara and Joe Morolong health areas meet the norm as far as the population per PHC facility is concerned. Ga-Segonyana health area needs more PHC facilities to serve the communities.
7. **Transport and quality of services for attending ANC care.** Both distance to a facility, and level of quality of services at the closest ANC facility received are important determinates of ANC visits. There is a need to improve both.
- Transport should be provided for women facing difficulties in attending antenatal care appointments and crucial interventions.
 - Emergency Medical Service (EMS) vehicles should be stationed at easily accessible distances. Certain misconducts by drivers need to be identified and avoided through close supervision.
8. **Effective collaboration with other sectors:** A multitude of different social, economic and cultural factors determine an individual's health.
- The Department of health cannot be solely responsible for improving the health of the population. There is a need for effective collaboration with other social and economic sectors, such as housing, employment, road and transport, welfare, education, sewerage and environment etc which have a major impact on promoting or hindering population health.
9. **Early ANC care.** Most pregnant women access ANC care late although they know the benefits of early ANC care for pregnant women to attain and maintain a state of good health throughout pregnancy and delivery.

- Health education and making good quality services available to clients will help in reversing the trends of late ANC care booking.

10. Effort should be made to reduce teenage pregnancies. Teenagers are more likely to experience maternal illness, miscarriage, stillbirth, and poor delivery outcomes compared to women who delay childbearing.

- Effective promotion of sex education that is balanced and realistic is important to encourage students to postpone sex until they are older.
- Promote safer-sex practices, increased make use of contraception.
- Youth and adolescent programmes at school are critical.

11. Health data management and reporting systems. The quality, accuracy and timely use and communication of information is poor. Contradicting information is reported from the facility and the district on crucial indicators.

- High-resource initiatives, such as investments in electronic record keeping systems, both in facilities as well as in district health services could improve the data challenge.
- Better monitoring and evaluation is needed to ensure that data collected is of sufficient quality for meaningful interpretation, planning and assessing of progress

12. Evidence-based resources allocation. While maternal and child health services utilization in JTG has been continuously improving, resources are lagging behind to adequately address the increased demand for health care. Given its geographical vastness and rural nature of the district, the budget allocation for the district should increase. Unit costing of services will create an opportunity for district health system managers, facility managers, and stakeholders to accelerate community health improvement through evidence-based prioritising activities, planning and budgeting.

- Decentralisation of the healthcare responsibility to districts should be accompanied with adequate district budgets.
- Districts are required to set priorities of interventions and allocate resources within the constraint of limited funding. Unit-costing of services assist decision

makers to make explicit rational decisions and not to rely on historical or political resource allocation processes.

- Effective monitoring of the intervention/programme implementations to improve health outcomes.
- The District health services delivery plan needs to be developed through stakeholder's consultation and progress reports should be provided and discussed with stakeholders. Community involvement in the delivery of health services such as planning and monitoring of progress will make them responsible for the management of all community health services in their respective municipalities.

13. Integration and referral systems. In all PHC facilities there is a need to develop strategies that improve effective referral systems, including communicating patient's information for continuity of care.

- This needs dedicated patient transport systems (EMS, Obstetric ambulances, and inter facility transport systems).
- Effective communication on patient's information between facilities for continuity of care. Electronic information technology is vital for the delivery of health care services.
- Better information technology systems and infrastructure would lead to better health care and health outcomes.

14. MCH Coordinator. The department should appoint a dedicated Maternal and child health programme coordinator in JTG district. The coordinator will be responsible and accountable for maternal and child health services.

- Funds must be available for the maternal and child health coordinator post.

15. Human Resources for Health. The World Health Organization's six building blocks of a health system, identified a well performing health workforce being a key factor for delivery of good quality, effective and efficient health care services. There is also a growing recognition that to address the human resources challenge for health, development and training strategies must be comprehensive.

- The district must plan a reform initiative to equitably allocate the existing health care workers in order to provide good quality and equitable healthcare services delivery and to meet the health needs of the population.
- A well-trained, highly skilled and competent health workforce is critical to provide good quality health services for all and address many of the poor health outcomes in the JTG district.
- Education and training of health personnel is a crucial element.
- Planning and management of human resources must receive appropriate attention. It must be accompanied by adequate financial and non-financial resources for the appointment and retention of staff.

16. Improving WBOT working conditions. In resource constrained settings, one response to a shortage of doctors and other highly trained health care professionals is task shifting from doctors to less trained health care workers such as nurses and community health care workers. The Community Based Outreach Teams (CBOT) in an effort to alleviate the health professional shortage, could create strong relationship with mothers and children. CBOT support the home visits, collaborations with schools or other agencies, and the delivery of health services in their community and facilities. Their current challenges which include:

- The salary level, one thousand nine hundred Rand (R1, 900) is not market related. There is a need to make some adjustment towards a living wage.
- The annual leave which is only 12 days needs to be revised.
- Integrating them into the system, including provision of adequate training, and improving their working conditions is essential.

17. Improvement in the health system building block. To bring functional and operational efficiency in the delivery of health service, the following are required: optimizing staffing role, managing the supply chain efficiently, good governance, use of information, and infrastructure.

- There is a need to hire health professionals appropriate to the size and skill mix needs of facilities to address the staff shortage, workload, high turnover and retention of staff. For a long-term human resource development plan during health professional training, recruitment process priority should be given to trainees from rural areas of the district.

8. References

1. African National Congress. A National Health Plan for South Africa. 30 may 1994.
2. Evance. I, Godfrey. M, Honorati. M, and Kathleen. K. Causes of Risk Factors for Maternal Mortality in Rural Tanzania-case of Rufiji Health and Demographic Surveillance Site (HDSS). African Journal of Reproductive Health. September 2013; 3 (17).
3. Department of Health. Human Resources for Health South Africa. HRH Strategy for the Health Sector: 2012/13-2016/17, NDoH, 2011.
4. Beltman J, Stekelenburg J and van Roosemalen J. Crisis in Human Resources for Health: Millennium Development Goals for Maternal and Child Health Threatened. Nederlands Tijdschrift Voor Geneeskunde, 2010. 154(5):A1159.
5. UNICEF. The State of the World's Children Special Edition: Celebrating 20 Years of the Convention on the Rights of the Child, 2008.
6. World Health Organization. WHO's work in the reproductive health: the role of the Special Programme. In: Progress in Reproductive Health Research, No.42, part 1. 1997.
7. United Nations General Assembly. Resolutions adopted by the General Assembly, United Nations Millennium Declaration. Fifty fifth sessions, 18 September, 2000.
8. National Department of Health. Handbook for District Clinical Specialist Teams, 2014. Pretoria, South Africa.
9. UNDP. Third progress report on the Millennium Development Goals (MDGs), 2010.
10. Department of Health. White Paper for the Transformation of the Health System in South Africa. Pretoria: Government Publishers; 1997. URL: <http://www.info.gov.za/whitepapers/1997/health.Htm>
11. Department of Health. Guidelines for maternity care in South Africa a manual for clinics, community health centers and district hospitals, 3rd edition, 2007.
12. Goga AE, Dinh TH, Jackson DJ for the SAPMTCTE study group. Evaluation of the Effectiveness of the National Prevention of Mother-to-Child Transmission (PMTCT) Programme Measured at Six Weeks Postpartum in South Africa, 2010.
13. Department of Health. Guidelines for District Health Planning and Reporting, 2003. Available at: http://www.healthlink.org.za/uploads/files/district_planning.pdf.
14. Health System Trust. (2012/13). District Health Barometer. Available at: <https://www.google.co.za/#q=district+barometer>

15. Zaruhi Mkrtchyan (2007). Baseline Assessment of Health Care Facilities in selected networks of Armavir, Ararat, Aragatsotn, Vayots Dzor and Syunik. Maternal and child health services in project NOVA supported networksIL. Available at: http://pdf.usaid.gov/pdf_docs/PNADR170.pdf
16. Woldesenbet, S, Goga , A, Jackson, D., for the SAPMTCT group. The South African programme to prevent mother-to-child transmission of HIV (PMTCT) evaluation of systems for early infant diagnosis in primary health care facilities in South Africa: report on results of a situational assessment, 2010 report
17. Department of Health. South Africa's National Strategic Plan for a Campaign on Accelerated Reduction of Maternal and Child Mortality in Africa (CARMMA), 2012, NDoH
18. National Department of Health Annual Report 2013/14
19. Worku E and Woldesenbet S. Are there particular social determinants of health for the world's poorest countries? *Afr Health Sci* 2011(1); 108-115
20. Levandal. E, et al. Community Dialogues: Antenatal Care and Prevention of Mother –to-Child Transmission of HIV. Health System Trust publication 26 March, 2014.
21. Bradshaw, D. Maternal Mortality Ratio–trends in vital registration data. *South African Journal of Obstetrics and Gynaecology*, 2012, (18) :2
22. World Health Organization. Roll Back Malaria: Framework for Monitoring Progress and Evaluating Outcomes and Impact. Geneva, Switzerland: World Health Organization, 2000.
23. Herman J, Fitz-Gibbon L, & Morris C. *Evaluator's Handbook*. Thousand Oaks, CA: Sage Publications, Inc. 1987.
24. Seye A et.al. How decentralisation influences the retention of primary health care workers in rural Nigeria. Co-Action Publishing, 2015
25. Kadobera D et al The effect of distance to formal health facility on childhood mortality in rural Tanzania, 2005-2007. *Glob Health Action* 2012; (5).
26. Katende C. The impact of access to health services on infant and child mortality in rural Uganda. *Population Studies* 2003; 9 (1).
27. Commission on Social Determinants of Health (CSDH). Closing the gap in a generation: health equity through action on the social determinants of health. Final report of the Commission on Social Determinants of Health. 2008, World Health Organization: Geneva.

28. Hofrichter, R., Bhatia, R. (Eds.) Tackling Health Inequities through Public Health Practice: Theory to Action. 2010, Oxford University Press.
29. Marmot, M.G. and R.G. Wilkinson, Social determinants of health. 2nd ed. 2006, Oxford; New York: Oxford University Press. x, 366 p.
30. World Health Organization. Quality assurance and improvement in health systems with special reference to primary health care: A shared responsibility. Technical paper, EM/RC 47/7, Regional Committee of Eastern Mediterranean, forty-seventh session. 2006.
31. Blumenfeld, S.N. Quality Assurance in Transition: *PNG Medical Journal*, 36:81-89, 1993.
32. Bernett, W.S. New wine in old bottle: Increasing Coherence in Early Childhood care and Education Policy: *Early Childhood Research Quarterly* (1993), 8, 4:519-58.
33. Gurdal, P., Cenkaya, H., Onem, E., Dancer, S. and Yilmaz, T. 2000; factors of Patient Satisfaction /dissatisfaction in Dental Faculty Outpatient Clinic Turkey. *Community Dentistry and Oral Epidemiology*. Vol 8.28, pp.461-9
34. Stinson, W and Sayer, P. Growth Monitoring and Promotion: A Review of experience in Seven Countries, August 1991.
35. Aldana JM, Piechulek H& Ahmed AS (2001): Client satisfaction and quality of health care in rural Bangladesh, *Bulletin of the World Health Organization*, 79 (6): 515.
36. Shiva Kumar, Lincoln C Chen , Mita Choudhury, Shibani Ganju , Vijay Mahajan, Amarjeet Sinha, Abhijit Sen. Financing health care for all: challenges and opportunities. Published Online: 2011, (377), No. 9766, p668–679,
37. Kutzin J. A descriptive framework for country-level analysis of health care financing arrangements. *Health Policy* 2001; 56(3): 171-204.
38. Ataguba J, and McIntyre D. Financing and Benefit Incidence in the South African Health System: Preliminary Results. Cape Town: Health Economics Unit, University of Cape Town, Working Paper 09-1. 2009.
39. Zere, E., Hospital Efficiency in Sub-Saharan Africa: Evidence from South Africa, UNU/WIDER.2000: Helsinki.
40. Evelyn KA and Timothy PJ. Can we trust measures of healthcare utilization from household surveys? *BMC Public Health* 2013, 13:853
41. World Health Organization. Everybody business: strengthening health systems to improve health outcomes: WHO's framework for action. World Health Organization 2007

42. Ludwick DA and Doucette J. Adopting electronic medical records in primary care: lessons learned from health information systems implementation experience in seven countries. *Int J Med Inform.* 2009 Jan; 78(1):22-31.
43. Floridia M.et.al. Rate, predictors, and consequences of late antenatal booking in a national cohort study of pregnant women with HIV in Italy Pubmed. 2014 May-Jun;15 (3):104-15
44. World Health Organization. “Monitoring and Evaluation of maternal health and services at the district level” technical consultation meeting report 5-8 December genera: World health organization (WHO). 2006, 22.
45. Watcharasernee N, Pinchantra P, Piyaman S. The incidence and complications of teenage pregnancy at Chonburi Hospital. *J Med Assoc Thai* 2006; 89: Suppl. 118-123.
46. Kirchengast S. Teenage-Pregnancies – A Biomedical and a Sociocultural Approach to a Current Problem. *Current Women’s Health Reviews*, 2009, 5, 1-7 1