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Factors Associated with the completion of Isoniazid Preventive Therapy among under-five children exposed to Tuberculosis patients in Blantyre, Malawi

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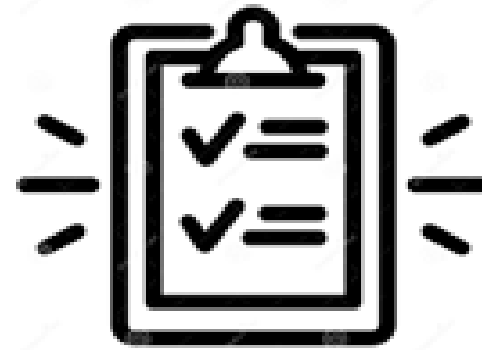
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Burden of TB

Burden of TB



In 2022, an estimated of 10.6 million people developed TB globally of which 1.3 million were children.



The African region ranked the second top region with the most TB cases accounting for 25%.



Malawi had an estimated TB incidence of 125 per 100,000 population in 2022. In the same year, 18,000 people developed TB in Malawi, among them, 2,800 were children.

Introduction

- One of the most vulnerable groups affected by TB are children. Children who live with TB patients have a higher risk of progression of the disease.
- The burden of TB among children can be significantly decreased and TB among children can be prevented .
- The WHO recommends 6 months of Isoniazid Preventive Therapy (IPT) to children who are exposed to an adult with active TB (child contacts) as one way of preventing progression of active TB.
- Though this intervention has proven to be effective uptake and completion of IPT still remains low.
- According to 2022 TB Global reports by the WHO, in 2022 out of an estimated 1.6 million child household contacts that were eligible for IPT only 588,406 (37%) started IPT and only few of these completed IPT .
- According to the National TB control program in Malawi, In 2020 an estimated 5025 child contacts were eligible for IPT and only 2,412 started IPT, of these only 47% completed IPT.



Research Aim and Objectives

Aim

The aim of this study is to determine the factors associated with the completion of six months of isoniazid preventive therapy (IPT) among children under five years who have been exposed to Tuberculosis (TB) patients in Blantyre, Malawi from 2015 to 2016.

Objectives

- I. To describe the index characteristics, household characteristics, health access characteristics and selected characteristics of children under five years who were household contacts of TB patients in Blantyre, Malawi.
- II. To determine the prevalence of completion of six months of IPT among children under five who were household contacts of TB patients by different characteristics (index characteristics, household characteristics and health access factors) in Blantyre, Malawi.
- III. To determine the factors associated with completion of six months of IPT among children under five years who were household contacts of TB patients in Blantyre, Malawi.

Methods

Study Design

- This study was a cross sectional study design that utilized data collected in a Randomized Controlled Trial that investigated the impacts of household contact tracing for adults and child contacts of TB patients in Blantyre, Malawi (Primary Study).

Study Population

- The study population were all child contacts (128) who had been identified from TB cases at QECH in 2015 irrespective of the trial arm that the index case was in the primary study

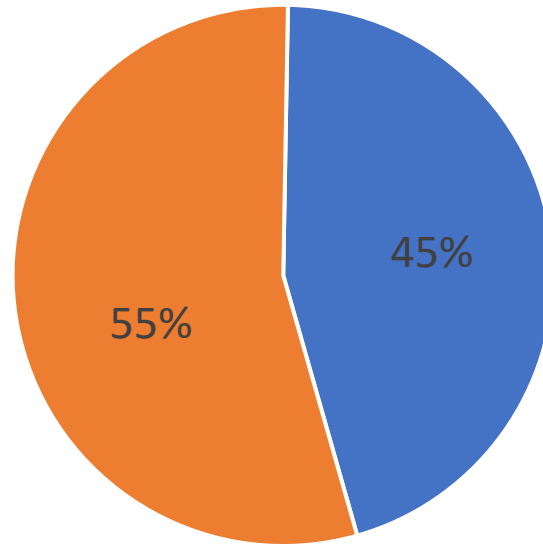
Results

Characteristics of the study population

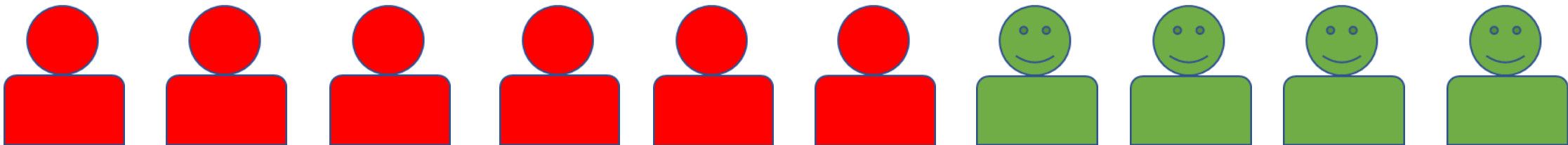
Variables	Variable Categories	N (%)
Total		128
<i>Child contact characteristics</i>		
Sex	Female Male	66 (52.0) 62 (48.0)
Age in years	Median (IQR)	3 (1-4)
Relationship with household head	Other Child	36 (28.1) 92 (71.9)
<i>Index case characteristics</i>		
TB type	Smear-negative TB Smear positive TB	43 (33.6) 85 (66.4)
HIV status of the index case ^a	HIV positive HIV negative	67(52.3) 50 (39.1)
<i>Household Characteristics</i>		
Wealth status ^b	Low Medium High	67 (52.3) 22 (17.2) 37 (28.9)
Number of <5 children in the household	Median (IQR)	2 (1-3)
Household health seeking decision maker	Parents Other guardians	88 (68.8) 40 (31.2)
Number of people living in the household	Median (IQR)	6 (4 -8)
<i>Health access characteristics</i>		
Distance to health facility (kms)	More than 5kms 5km or less	23 (18.0) 105 (82.0)
Type of contact tracing	Patient conducted tracing Routine contact tracing	62 (48.4) 66 (51.6)

Results

Prevalence of IPT Completion



■ IPT Completed ■ IPT not Completed



Results

Factors associated with the completion of IPT

Variables	Variable Categories	Univariable OR (95% CI)	Multivariable OR (95% CI)
Child contact characteristics			
Sex	Female	1	1
	Male	0.89 (0.43 - 1.86)	0.82 (0.33 - 2.01)
Age in years		0.91 (0.69 - 1.20)	0.87 (0.61 - 1.24)
Relationship with household head	Other	1	1
	Child	1.69 (0.72 - 3.97)	0.92 (0.24 - 3.53)
Index case characteristics			
TB type	Smear-negative TB	1	1
	Smear positive TB	0.86 (0.39 - 1.88)	0.91 (0.36 - 2.34)
HIV status of the index case	HIV positive	1	1
	HIV negative	0.49 (0.23 - 1.04)	0.34 (0.13 - 0.86)*
Household Characteristics			
Wealth status	Low	1	1
	Medium	1.82(0.66 - 5.00)	1.00(0.26 - 3.88)
	High	4.18(1.70 - 10.25)**	2.99 (0.78 - 11.43)
Number of <5 children in the household		0.64 (0.39 - 1.07)	0.60 (0.26 - 1.37)
Household health seeking decision maker	Parents	1	1
	Other guardians	2.58(1.12 - 5.95)*	3.33 (1.16 - 9.54)*
Number of people living in the household		0.81 (0.69 - 0.96)*	0.93 (0.71 - 1.22)
Health access characteristics			
Distance to health facility (kms)	More than 5kms	1	1
	5km or less	2.78 (1.02 - 7.60)*	4.54(1.20 - 17.11)*
Type of contact tracing	Patient conducted tracing	1	1
	Routine contact tracing	2.41(1.14 - 5.11)*	3.37 (1.30 - 8.75)*

*P value < 0.05, **P value < 0.01, ***P-value < 0.001

Discussion

- Distance to the health facility was significantly associated with the completion of IPT. Child contacts who lived at a distance of 5km or less to the health facility were more likely to complete IPT.
- This study found a significantly higher completion of IPT among child contacts who had their parents as the household's healthcare seeking decision maker as opposed to other guardians.
- This finding highlights the importance of understanding the role of the decision maker in the utilization of health care services in the household and treatment adherence.
- Index case HIV status was significantly associated with the completion of IPT. Child contacts whose index case was HIV positive were less likely to complete IPT compared to child contacts whose index cases were HIV negative.
- Contact tracing was significantly associated with the completion of IPT among child contacts. That is to say, children from households where the index TB patients/guardians were trained to conduct household screening and encourage IPT initiation (Intervention of primary study) had higher IPT completion.

Conclusion

- In conclusion this research investigated the factors associated with the completion of IPT among child contacts. IPT is one of the effective ways of preventing TB among child contacts, effectiveness of IPT greatly depends on completion.
- Therefore, it is important to understand the factors that affect the completion of IPT among child contacts.
- The findings of this study highlighted several factors that are associated with the completion of IPT, these are; distance to the health facility, household healthcare decision maker, HIV status of the index case and the type of contact tracing.
- The findings of this study demonstrate the contribution of implementation research to health programmes. In addition, this study provides valuable insights of the factors that affect the completion of IPT.
- By addressing the factors identified, completion of IPT can be improved thereby preventing TB among children.
- Therefore, there is need to find approaches that address and enhance IPT completion.

Recommendations



- ✓ The establishment of more health care facilities or clinics in under deserved areas which will reduce the distance between communities and health facilities hence promoting IPT collection and IPT completion.



- ✓ The need to intensify IPT related health education to promote understanding among caregivers of what IPT is and the benefits of completing IPT



- ✓ The need for the Malawi National Tuberculosis program to establish effective interventions that improve contact tracing of child contacts.
- ✓ Improved contact tracing that involves targeted efforts in actively identifying and engaging child contacts will enhance IPT access, therefore, improving the completion of IPT.

Acknowledgments



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