

## **CHAPTER 5**

### **Findings, limitations and recommendations**

#### **5.1 INTRODUCTION**

This chapter summarises the study, presents the findings, discusses the limitations of the study, and makes recommendations for practice and further research.

#### **5.2 SUMMARY OF THE STUDY**

The focus of the study was to determine the ability of PHC nurses in provincial government facilities to diagnose TB in children in the Gert Sibande district, Mpumalanga, South Africa.

The researcher conducted a literature review relating to TB in children nationally and internationally, including the management of TB in children.

A quantitative, descriptive approach was adopted to determine the adequacy of specific nursing interventions in a particular clinical problem and generate knowledge that could directly influence and improve clinical practice (Burns & Grove 1997:40).

The target population included all the PHC nurses working in government facilities, namely CHCs, fixed clinics and mobile clinics, in the Gert Sibande district, Mpumalanga, who were responsible for the primary management of children with suspected TB. The majority of the facilities were situated in rural areas. Self-administered questionnaires were given to 62 respondents, aged between 24 and 61 years of age, with a median age of 39 years; the majority of

the respondents were women, and on-site evaluation visits were conducted at 62 facilities.

The researcher used purposive sampling for the questionnaire and the clinic record review, and the whole population for the clinic audit of the government clinics, mobile clinics and CHCs.

The objectives of the study were to

- determine the knowledge of the PHC nurses in the Gert Sibande district, Mpumalanga regarding TB diagnosis in children
- establish whether the PHC setting is equipped to diagnose TB in children
- evaluate the completeness of TB child contact screening of confirmed TB smear positive adult cases
- determine the need for a plan of action for PHC nurses in Mpumalanga for improved diagnosis of TB in children

Data were electronically captured in a dedicated Excel for Windows spreadsheet and analysed using the Statistical Analysis System (SAS) for Windows version 9.1.

### **5.3 FINDINGS**

The findings are discussed according to the four objectives of the study.

#### **5.3.1 Determine the knowledge of the PHC nurses in the Gert Sibande district, Mpumalanga, regarding TB diagnosis in children**

The findings revealed that the respondents had varying levels of knowledge regarding TB, particularly diagnosis of TB in children. The majority of

respondents knew that a tuberculin test should be performed when TB was suspected and more than half knew that a positive tuberculin test meant that a child is infected with TB. Few respondents, however, were aware of the conditions that suppress a tuberculin test reaction or how to read the test. Unless the test is correctly read, then, children will be misdiagnosed and delayed diagnosis could have a fatal outcome. Cremin and Jamieson (1995:107) found that rapid progression of TB is more common and dangerous in young children and if not diagnosed and treated promptly, may lead to death or chronic morbidity

Most of the respondents knew that sputum positive adults should be the main focus of TB control, but it was of concern that only 38,7% indicated that children under 2 years of age were at risk of developing serious forms of TB. According to Donald et al (1999:39), children under 2 years of age are at risk of developing more serious types of TB, including TB meningitis and miliary TB. An appreciation of the greater risks in children could heighten the index of suspicion amongst PHC nurses.

Of the respondents, only 19,3% recognised that persistent wheezing and 41,9% recognised that fever were suggestive symptoms of TB in children. Most references to childhood TB describe wheezing as a suggestive symptom of TB and the two South African guidelines also list it as a suggestive symptom. According to Crofton et al (1992:93), a wheeze due to lymph node pressure on a bronchi is gentle and heard both when breathing in and out. Beyers et al (1994:264) point out that the symptoms of childhood TB are relatively non-specific, with only a persistent cough and wheezing usually prominent. Although the majority of the respondents identified most factors associated with an increased risk of TB in children, most did not identify the risk of exposure to cigarette smoke and smoke derived from household wood and coal fires as risk factors.

The TSC currently advocated as best practice for diagnosing TB in children in developing countries was not widely used. Van Beekhuizen (1998:159) found

that the TSC is a very helpful method for diagnosing TB in children at PHC facilities in developing countries and only 5,0% of patients could not be correctly diagnosed by this method. The TSC is an affordable method and can be implemented almost immediately at PHC level.

Only 53,2% of the respondents had received training on TB and the period of training varied from 1 to 10 days. The trained respondents performed better on questions relating to strategies to prevent TB in children, namely chemoprophylaxis of child contacts (trained 63,6% and untrained 44,8%), a functional NTCP (trained 51,0% and untrained 34,5%) and treating smear positive adults (trained 60,6% and untrained 55,5). More trained respondents knew how to interpret a positive tuberculin test (trained 66,6% and untrained 62,0%), the correct site for administering a Tuberculin test (trained 84,8% and untrained 55,1%), and how to read a Mantoux test (trained 63,6% and untrained 48,2%). They also recognised the value of tuberculin tests (trained 72,7% and untrained 62,0%), chest x-rays (trained 54,5% and untrained 41,3%) and history of contacts with sputum positive pulmonary TB (trained 87,8% and untrained 55,1%) for diagnosing TB in children more frequently.

Only ten facilities (16,1%), all staffed by trained respondents, were found to use the TSC. More trained respondents indicated the symptoms indicating that a child was responding to treatment, namely gaining weight (trained 75,7% and untrained 51,7%) and resolution of TB symptoms (75,7%).

All the respondents had poor knowledge about medical conditions that suppress a tuberculin test, namely HIV, malnutrition, steroids, cancer treatment and severe disseminated TB. Harries et al (1996:66) state that the tuberculin test can be suppressed by HIV, malnutrition, severe bacterial infections including TB itself, viral infections including measles, chickenpox, glandular fever, cancer and immunosuppressive drugs. Schaaf et al (1993:373) conclude that despite the frequency of negative results, in early infancy the tuberculin test remains an essential part of the evaluation of any child suspected of having TB. Some of the

respondents did not know that x-rays were not the gold standard for diagnosing TB in children (trained 30,3% and untrained 13,7%) or that children under the age of 2 years are the group at risk of developing serious forms of TB (trained 42,4% and untrained 34,4%). Van Rheezen (2002:435) stresses that in the absence of a gold standard in children, the diagnosis of TB in children is nearly always presumptive.

The study found that training had a positive impact on the PHC nurses' knowledge. However, the study also found clear deficiencies in the content of the current training courses. These will need to be standardised and include core knowledge to assist nurses to correctly approach screening and diagnosis in children.

However, knowledge alone is insufficient. Although more trained (25,8%) compared to untrained (9,6%) respondents indicated that they were using the TSC, the researcher found that only 16,1% of the trained respondents were actually implementing the TSC. Training will therefore need to become less theoretical and more practice based. Trainees should be required to show evidence of implementation of learning in their own clinic setting. It is encouraging that all the respondents, except the PHC nurse who had received 10 days' training, indicated that they would benefit from extra TB training. There is thus an appreciation of the need for additional knowledge and skills.

### **5.3.2 Establish whether the PHC setting is equipped to diagnose TB in children**

The clinic visits indicated that the PHC nurses were equipped to diagnose TB in children in the clinic setting. The *South African tuberculosis control programme: practical guidelines (2000)* and *Tuberculosis: a training manual for health workers* were available in most of the facilities. Sputum bottles were generally available and stock-outs were very rare.

However, some findings negatively affect the ability of PHC nurses to screen and diagnose TB in children. Few facilities had a fast lane for coughing patients. A variety of cough registers were in use but these were not of equal quality. Most facilities did not use the TSC advocated in the national guidelines and the paediatric diagnostic flow chart was not found in any facility.

Tuberculin tests were only available in less than half of the facilities and no x-ray facilities or equipment to permit gastric washing were available at PHC level. Therefore most of the facilities were not adequately equipped to allow a PHC nurse to diagnose TB in children. Nevertheless, most of the elements required to allow diagnosis in the primary care setting could be implemented with adequate training and limited expense.

### **5.3.3 Evaluate the completeness of TB child contact screening of confirmed TB smear positive adult cases**

There was indirect evidence that contact tracing was incomplete. The fact that there were only 22 child contacts is strongly suggestive that contact tracing is poor. Only 95 of 491 (19,3%) patient records had the contact section completed.

Several factors that were present should be tackled to facilitate the diagnosis of TB in children who were contacts of smear positive adults including the correct use of the official TB contact screening GW20/12 and addressing the reasons provided for not using GW20/12. The responsibility of contact tracing needs to be clarified at each facility. The complicated prophylactic regimes as a result of the different medications available should also be simplified. According to Schaaf et al (1995:374), prevention of TB in early infancy rests upon the early detection and treatment of TB of the infant's mother and other members of the infant's household. Gie et al (1993:263) state that a history of a close contact with an infectious adult and the occurrence of repeated or persistent respiratory infections in children in an area of high TB incidence should alert health workers to the possibility of TB.

Although not an objective of the current study, it was disconcerting to find that the DOTS system was only used in 50,0% of the facilities and that TB trials of treatment in children were still practised and advocated by some medical officers. These are fundamental flaws in TB control that require urgent attention.

#### **5.3.4 Determine the need for a plan of action for PHC nurses in Mpumalanga for improved diagnosis of TB in children**

The findings provide a clear mandate for a plan of action for improving the diagnosis and management of TB in children by PHC nurses in Mpumalanga.

#### **5.4 LIMITATIONS OF THE RESEARCH**

The study focused on the Gert Sibande district in Mpumalanga, therefore the findings cannot be generalised to other areas. However, it is likely that similar issues are prevalent in other South African provinces and southern African countries. As TB control is a national health priority, similar audits of practice should be considered in these settings. There were inconsistencies between questionnaire responses and on-site observations. This is not uncommon with respondents' occasionally providing responses reflecting knowledge rather than practice when answering a questionnaire. None of the individual data-collection tools provided a comprehensive evaluation in its own right, but by triangulation a more complete picture of practice was provided.

#### **5.5 PRACTICAL SIGNIFICANCE OF THE STUDY**

The findings will be presented to provincial officials responsible for TB control and a report will be tabled at district level with a synopsis tabled through the provincial communicable disease control division. The findings should have major policy and training implications for PHC nurses in the Gert Sibande district and Mpumalanga province as a whole. It is envisaged that the plan of action to be

prepared will lead to more complete notification of TB in children and earlier diagnosis and treatment that will enhance control through interrupting transmission.

## **5.6 RECOMMENDATIONS FOR FURTHER STUDY**

It is recommended that further research be conducted into the

- usefulness of the TSC in the South African context, particularly in the present high prevalence HIV era
- impact of the proposed plan of action on TB diagnosis and management in children once it is implemented

## **5.7 RECOMMENDATIONS TO IMPROVE NURSING PRACTICE AND CARE OF PATIENTS**

Based on the findings of this study, the researcher recommends the following to improve the early diagnosis of TB in children in particular, and thereby improve health care delivery to children with TB and nursing practice as a whole. The study found important deficiencies in the respondents' knowledge, limited screening of TB child contacts of confirmed smear positive adult cases, and facilities not adequately equipped. All these factors indicate the urgent need for a specific plan of action for diagnosing TB in children in the Gert Sibande district and in Mpumalanga province.

The proposed plan should include

- Setting up of a task team to clearly define the specific elements required to improve TB diagnosis in children, including clinic nurses and senior health management.
- Setting up of a group to oversee the implementation of the plan.

- Development of a structured training plan that focuses on diagnosis and management of TB in children and covers the core issues identified by this survey, while taking training beyond the classroom into PHC facilities.
- Guidance of nurse educators who plan teaching programmes.
- Simplification of protocols and regimes for the management of children contacts that merit prophylactic treatment.
- A screening strategy for TB child contacts of confirmed smear positive adult TB cases that is more structured and a core component of the training plan.
- Mechanisms for contact tracing and identification of the person responsible for each facility.
- Uniform standard equipment and consumables that should be available in all PHC facilities.
- An in-service training programme for regular retraining of PHC nurses to ensure correct practices and confidence amongst these front-line health workers.
- A regular visiting schedule to all facilities that includes review of TB management in children.
- Ensuring that TB management in children is included in the medium-term development plan of Mpumalanga province.

This plan of action should result in more complete notification of TB in children, with earlier diagnosis and treatment interrupting transmission and preventing unnecessary morbidity and mortality.

## **5.8 CONCLUSION**

This study investigated the ability of the PHC nurse to diagnose TB in children. The findings indicated that PHC nurses lack the relevant knowledge to diagnose TB in children. The PHC setting is presently not equipped sufficiently to support diagnosis of TB in children. Screening of TB child contacts of confirmed TB

smear positive adult cases needs attention. There is thus an urgent need for a plan of action for PHC nurses in the Gert Sibande district, Mpumalanga, for improved diagnosis of TB in children.