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Our Issues, Our Drugs, Our Patients

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Comparison of Health Services Costs and Patient Clinical Outcomes of Two Models for Dispensing Antiretroviral Treatment in South Africa

A Kheth’Impilo Initiative

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Background

South Africa currently has 1 Pharmacist per 3837 population – WHO recommends 1 Pharmacist per 2300
Background

• Pharmaceutical care is an important component of the ART program.

• Pharmacists address potential drug related problems and promote patient adherence.

• Excellent adherence is critical to the individual patient’s well being and prevention of viral resistance.

• Shortage of pharmacists are due to limited training institutions, migration of pharmacists to developed countries, rural/urban maldistribution and private/public sector maldistribution.
Two task shifting models have been developed in recent years:

1. Indirectly supervised pharmacist assistants (ISPA)
2. Clinical nurse practitioners who issue pharmaceuticals.

>2.6 Million people have started ART, yet only 42% of HIV positive adults receive ART.
Background

A previous economic evaluation has found the ISPA model to be the least costly pharmaceutical model in the ART Program, but did not include measures of quality of care or clinical outcomes.

The aim of this study was to compare the ISPA and nurse-managed dispensing of ART models in terms of:

1. Quality of pharmaceutical care
2. Clinical outcomes of patients assessing these services
3. The cost of providing each of these approaches from a health service perspective.
Methods

A retrospective analysis of pharmaceutical care quality audits, patient clinical data, and staff costing data was undertaken in South Africa.

All facilities were primary healthcare sites supported by Kheth’Impilo – a non-profit organization that supports the SA DOH with health system strengthening innovations and pharmacy services.
Methods

• ISPAs are qualified post basic pharmacist assistants with additional 6-12 months mentoring and training.

• According to the law PBPAs can work under the indirect supervision of a pharmacist in the primary care sector under specific conditions.

• ISPAs take responsibility for the dispensing of ART, management of the dispensary, management of all medicine orders in the facility.

• A Pharmacist performs a supervisory visit once a week.
Methods

• To expand the ART program NIMART was introduced in SA in 2010.

• In the nurse managed pharmacy model we analysed in KwaDukuza, nurses initiated patients onto ART and issued the medication – a model widely adopted in SA.

• Stock ordering, control and management of the medicine room are mostly the nurses responsibility.

• A Pharmacist visits the NIMART nurses monthly and performs the same quality audit as at the ISPA facilities.
Data collection and analysis

1. Good pharmacy practice
2. Stock control
3. Evaluation of prescriptions & patient folders
4. Patient exit interview

- Random Folder review at ISPA facilities
- At nurse managed facilities, all Folders for newly initiated patients reviewed during proceeding month

Compared using Risk Ratio’s (RRs) & 95% Binomial exact confidence Intervals (CI)
Results

Patient Retention after two years of ART

79.3% vs. 68.5%

adjusted hazard ratio=1.29 [95% CI:1.15-1.46; P<0.0001]
Patient retention at Indirectly Supervised Pharmacist Assistant (ISPA) dispensing and nurse-managed sites in South Africa
Results

Virological Suppression

89.5% vs. 84.8%

adjusted odds ratio=1.18 [95% CI: 1.00-1.38; P=0.042]
Results

Cost per item dispensed

$0.43 vs. $0.84
Results

Cost per patient Visit

$1.35  vs.  $1.89
Facility human resources involved with pharmaceutical related activities and average provider costs

<table>
<thead>
<tr>
<th></th>
<th>ISPA facilities(^1)</th>
<th>Nurse managed facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of sites</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Staff FTE assisting in Pharmaceutical related activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pharmacists</td>
<td>0.9</td>
<td>0.6</td>
</tr>
<tr>
<td>Indirectly Supervised Pharmacist Assistants</td>
<td>9.3</td>
<td>-</td>
</tr>
<tr>
<td>Post-Basic Pharmacist Assistants</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>Professional nurses(^2)</td>
<td>0</td>
<td>23.5</td>
</tr>
<tr>
<td>Annual number of items dispensed</td>
<td>420 332</td>
<td>1 121 537</td>
</tr>
<tr>
<td>Annual number of patient visits</td>
<td>132 834</td>
<td>497 488</td>
</tr>
<tr>
<td>Ratio FTE pharmacy related staff to monthly patient visits</td>
<td>1:1085</td>
<td>1:1423</td>
</tr>
<tr>
<td>Provider staff cost per patient visit (US$), mean</td>
<td>1.35</td>
<td>1.89</td>
</tr>
<tr>
<td>Provider staff cost per item dispensed (US$), mean</td>
<td><strong>0.43</strong></td>
<td><strong>0.84</strong></td>
</tr>
</tbody>
</table>

\(^1\) Values refer to staff and activities limited to HIV-related care.

\(^2\) Nurses who consulted patients and issued medicines were assumed to spend an average of 32% of their time with pharmaceutical related activities.

ISPA, indirectly supervised pharmacist assistant; FTE, full time equivalent.
Pharmaceutical quality audit scores

- Good Pharmacy practice: ISPA 84.0%, Nurse 73.3%
- Stock control: ISPA 90.2%, Nurse 80.4%
- Folder evaluation: ISPA 91.3%, Nurse 90.2%
- Exit interview: ISPA 89.1%, Nurse 75.9%
- Weighted total: ISPA 88.8%, Nurse 79.9%
Methods
Conclusions

Lower pharmaceutical services cost

Improved patient clinical outcomes

Improved pharmaceutical quality
Limitations

• The two models of care were in two different provinces – Western Cape and KZN

• The difference in clinical outcomes may not be attributed to the pharmaceutical care model only but may also be related to differences to population or health system or it may be a combination of factors.

• We could not confirm the cause of the difference in clinical outcome through this operational research study.
Acknowledgements

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Thank you