Patient experiences with designated service provider medication delivery in a rural general practice in KwaZulu-Natal: a cross-sectional study on HIV patients

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Background: Healthcare funders (medical schemes) have established disease management programmes (DMPs) and designated service providers (DSPs) to reduce costs and improve patient outcomes to meet legislative requirements. However, there is a paucity of studies that have researched patient experiences and adherence to medication through the DSP process.

Methodology: A retrospective cross-sectional descriptive study was conducted between January and June 2013 within the designated family practice amongst all HIV patients who were receiving antiretroviral treatment provided by healthcare funders via DSP agreements (Medipost, Direct Medicines, etc.) Data were collected using an anonymous self-administered questionnaire as well as a record review tool.

Results: The majority of patients (77%; 26) reported receiving antiretroviral medication deliveries on time, receiving a reminder before delivery (88%; 30) and receiving correct medications (77%; 26). Short messaging services (SMS) were the most popular method used to inform patients of an impending medicine with 85% (28) of all respondents reporting that they received SMS messages. Some 70% of the patients rated their satisfaction with DSP medication delivery between good and excellent. However, 30% of the patients rated the service as satisfactory to poor.

Conclusion and recommendation: DSP delivery of ART medication has fared well in this study, with the majority of patients satisfied with the services. This may in part be due to the higher level of education amongst the participants of the survey. A national study should be conducted using different population groups to identify the satisfaction and adherence to HIV medication amongst patients from a lower socio-demographic profile.

Keywords: antiretroviral treatment, designated service providers, HIV and AIDS, private practice

Introduction
Approximately 6.3 million people were living with the human immune deficiency virus (HIV) in South Africa in 2013. The estimated HIV prevalence amongst adults between the ages of 15 and 49 years was 19.1% in 2013. Geographically KwaZulu-Natal has the highest HIV prevalence (40%) compared with 18% in the Northern Cape and Western Cape. In order to tackle this epidemic, the South African government has expanded its antiretroviral programme and currently has the largest treatment programme globally with approximately 42% of adults on antiretroviral treatment.

The total number of patients receiving antiretroviral therapy (ART) increased from 47 500 (95% CI 42 900–51 800) to 1.79 million (95% CI 1.65–1.93 million) between the middle of 2004 and the end of June 2011. By October 2014, it was pronounced that approximately 2.7 million people were receiving ART in South Africa. This number was expected to reach 3.1 million by 2015, representing very good coverage of individuals with CD4+ T-cell counts < 350 cells/μl.

In June 2011, 85% of patients were receiving ART through the public health sector, 11% were receiving ART through disease management programmes in the private sector, and the remaining 4% were receiving ART through community treatment programmes run by non-governmental organisations (NGOs).

Although the growth of the public sector HIV programme has outstripped that of the private sector, the private health sector plays an important role in HIV care. More than 200 000 patients are on treatment in the private sector through medical schemes. The private sector affords patients easier access to HIV and AIDS care, but concentrates more on ART with poor collaboration between this and the public health services. The private sector role players include medical scheme beneficiaries (15% of population), workplace treatment programmes, community treatment programmes and individuals paying for their own treatment.

Healthcare funders (medical schemes) have established disease management programmes (DMPs) and designated service providers (DSPs) to reduce costs and to improve patient outcomes to meet legislative requirements. In 2006, there were over 17 DMPs providing ART to patients with five major players (Aids for Aids (36%), Lifesense (15%), Discovery (11%), Arum Health (11%), Qualsa (11%)), accounting for the majority of the patients.

DMPs provided by medical schemes in South Africa consist of mainly two components — (a) health education and promotion and (b) a therapeutic component — that address the cost-effective treatment of patients using relevant guidelines and the delivery of patient medication using DSPs. DSP pharmacy services are increasingly being utilised by medical schemes to provide ART to patients. Successful HIV management is dependent on near perfect adherence to ART, which is in turn dependent on a reliable supply of antiretroviral medications. With this in mind, the DSPs have employed medical advisers to
make treatment recommendations and authorise appropriate treatment. The case managers provide support and counselling for individuals in their care and ensure that the patient prescription is forwarded to the drug distributor. In addition, the case manager ensures that the patient receives the monthly supply of medication and establishes monthly contact to counsel the patient and monitor the correct use of the drugs dispensed (Figure 1).

However, there is a paucity of studies that have researched patient experiences and adherence to medication through the DSP process. This study aims to assess the process of DSP pharmacy medication delivery, patient satisfaction with and adherence to HIV treatment, whilst receiving medication through a DSP at a family practice.

Methodology
A retrospective cross-sectional descriptive study was conducted between January and June 2013 at the researcher’s general family practice situated in a small coastal town on the KwaZulu-Natal north coast and part of the eThekwini municipality. The medical practice operates as a general family practice with approximately 5–10 patients on ART seen per day. The racial profile is approximately 70% of black ethnicity and 30% Indian. Almost 80% of patients are medical scheme members and 20% are self-funded. The principal investigator owned the private practice and was initiating an increasing number of patients on ART and was receiving ad hoc negative comments concerning the DSP pharmacy services. The main reason for the focus on HIV medication rather than other non-communicable diseases was that this was a novel programme from the practitioners’ and patients’ perspective.

Study population
The study population comprised all HIV patients within the designated family practice are receiving ARVs provided by healthcare funders via DSP agreements (Medipost, Direct Medicines, etc.). All patients who are contracted to DSPs for their ART were identified from medical records and contacted by the researcher to participate in the study. A cohort of 36 patients was identified. No patients were excluded, unless they declined participation.

Data collection
Data were collected using an anonymous self-administered questionnaire. The questionnaire was available in the study participant’s choice of language (English or isiZulu).

A records review tool was developed to review patients’ clinical records. Patients were encouraged to attend the medical practice at least monthly, where they were clinically examined for treatment failure and blood samples drawn when required. Viral load and CD4 counts were done every three months.

Pill counts of patient ARVs were conducted monthly when patients presented themselves for clinical review, or decided to pick up delivered medication. Patients were requested to bring the previous month’s medication boxes and bottles when visiting the medical practice.

Data handling
A database was created using the IBM SPSS® statistical software package (IBM Corp, Armonk, NY, USA). Data were entered directly into the database without using a separate coding sheet so as to minimise the introduction of data handling errors. All data entries into the database were double-checked against the questionnaires for correctness. The completed database was then examined for inconsistencies and outliers. The computer database was password protected and back-up copies were securely stored.

Data analysis
Descriptive statistical analysis was conducted on the data and presented as frequency tables and graphs.
Ethical consideration
Ethical approval was obtained from the University of KwaZulu-Natal Biomedical Research Ethics Committee (ref: BE071/13). Informed consent was obtained from the patients prior to the study.

Results
Profile of the participants
Sixty-eight per cent (23/34) of the respondents who participated in the study were females. Seventy-three per cent (25/34) of the participants were aged between 31 and 50 years old, with 38% between 31 and 40 years old and 35% of all respondents between 41 and 50 years old. Most patients (88.2%) had matriculated from school, with 52.9% of patients (18 of 34 respondents) achieving post-matriculation qualifications, with 2.9% (1 respondent) who held a technical certificate. In line with their qualifications all 34 patients were employed and all 34 patients were members of a medical scheme. Approximately 60% of the participants were members of the Government Employees Medical Scheme (GEMS), 15% (5) being members of the Discovery Medical Scheme and 12% (4) belonging to the Polmed Medical Scheme.

Patients enrolled in the study had been on ARTs for varying periods of time. One patient had been on ART for approximately 16 years, having commenced treatment in 1997. Only three patients (8.8%) of the respondents had commenced ARVs in the current year. Fifty-six per cent (19) had been on treatment for less than 5 years whilst 35% (12) patients had been on ART for between 6 and 15 years. The general practitioner (GP) initiated the largest proportions of patients (20; 58.8%) on ART. A large proportion (23; 67.6%), chose to have ART delivered to the doctor’s address for pick-up. A total of 7 (20.6%) of the respondents chose to pick up their ART from a pharmacy and 4 (11.8%) preferred their medications delivered to a post office. None of the respondents chose to have ART delivered to a home address (Table 1).

Experiences with DSP medication delivery
The majority of patients (77%; 26) reported receiving ART medication deliveries on time, receiving a reminder before delivery (88%; 30) and receiving the correct medications (77%; 26). Eight patients (23%) did not receive their ART on time. Short messaging services (SMS) were the most popular method used to inform patients of an impending medicine delivery with 85% (28) of all respondents reporting that they received SMS messages. Eight respondents reported receiving incorrect medication deliveries in the past 6 months (Table 2).

Patient satisfaction
Seventy per cent of the patients rated their satisfaction with DSP medication delivery as between good and excellent. However, 30% of the patients rated the service as satisfactory to poor (Figure 2).

Adherence to ART
Eighty-two per cent (28) of participants reported that they had not missed any ART doses in the last 7 days. There were, however, 3 patients (8.8%) who missed 1 ART dose in the preceding 7 days, 2 patients (5.9%) who missed 2 doses of ART in the preceding 7 days and 1 patient (2.9%) reported missing 4 ART doses in the preceding 7 days. Seventy-four per cent (25) of patients rate their adherence as having been between 90% and 100% whilst 9 patients (26%) rated their adherence to have been less than 90% (Figure 3).

Clinical outcomes
Twenty-one (62%) patients had a viral load of less than 50 copies/ml. Of these 15 patients had undetectable HIV viral loads. Two patients (6%) recorded HIV viral load levels greater than 1000 copies/ml. Nineteen (57%) patients recorded CD4 cell counts below 600 cell/μL, with 4 patients (12%) having severe immune suppression and a CD4 count less than 200 cell/μL. 9 patients (27%) having CD4 cell counts between 201 and 400 cells/μL and 6 patients (17.6%) having CD4 cell counts between 401 and 600/μL (Table 3).

Discussion
DSP pharmacy services fared relatively well in this study, with the majority of patients (77%; 26) reporting having received ART medication deliveries on time; receiving a reminder before delivery (88%; 30) and receiving the correct medications (77%; 26); however, 24% (8) reported receiving incorrect medications.

Patient satisfaction is an important ingredient for good adherence and eventual treatment success. Ten patients (30%) reported they were not satisfied with DSP pharmacy services, and rated the service as merely ‘satisfactory,’ or ‘poor’. This is in contrast to a 2010 Old Mutual healthcare survey, which showed

Table 1: Frequency table of socio-demographic profile of participants

| Factor               | Number | Percentage (%) |
|----------------------|--------|----------------|
| Gender               |        |                |
| Males                | 11     | 32             |
| Females              | 23     | 68             |
| Age                  |        |                |
| 21–30 years          | 6      | 18             |
| 31–40 years          | 13     | 38             |
| 41–50 years          | 12     | 35             |
| 51–60 years          | 2      | 6              |
| > 60 years           | 1      | 3              |
| Level of education   |        |                |
| Post-matric qualification | 18    | 53             |
| Matriculation        | 12     | 35             |
| Secondary education  | 3      | 9              |
| Technical certificate| 1      | 3              |
| Medical scheme       |        |                |
| Bonitas              | 2      | 6              |
| Discovery            | 5      | 15             |
| GEMS                 | 20     | 59             |
| Medshield            | 2      | 6              |
| Polmed               | 4      | 12             |
| SABC                 | 1      | 3              |
| Duration on ART      |        |                |
| 0–1 year             | 3      | 9              |
| 1–5 years            | 19     | 56             |
| 5–10 years           | 9      | 26             |
| > 10 years           | 3      | 9              |
| Delivery address     |        |                |
| Doctor               | 23     | 68             |
| Pharmacy             | 7      | 21             |
| Post office          | 4      | 12             |
| Home                 | 0      | 0              |
DSP pharmacy courier services rely on patients having a secure delivery address. A secure delivery address is critical to ensuring confidentiality and safe drug delivery. Many study respondents live and work in rural areas that have unreliable addresses, therefore these patients have difficulty utilising DSP pharmacy courier services. Workplace addresses are not usually favoured because of concerns over confidentiality and therefore most facilities in this study still choose to access medication at their general practitioner’s practice.

Medical schemes are embarking on the DSP route of delivery of medication to patients with chronic conditions primarily as a cost-containment strategy. Although this has the potential to ensure that patients take responsibility for their own well-being, the negative implication of this strategy is that patients may feel less of a need to consult with their treating doctors regularly, except when they require repeat prescriptions. A breakdown in this healthcare provider–patient relationship can result in poor adherence to treatment plans, missed opportunities and ultimately treatment failure.

DSP pharmacy services are complex programmes with many role players and complex administrative structures, which patients find difficult to understand and interact with. Patients may experience difficulty solving service-related issues, which can result in drug delivery problems and treatment interruptions. DSP pharmacy programmes require patients to have knowledge and access to modern technology (fax, email, telephone) to utilise services effectively. Many areas surrounding the study area are rural, with poor access to modern technology and many patients having no computer literacy. Therefore patients may have difficulty faxing or emailing medicine prescriptions to DSP pharmacies, as well as difficulty receiving drug delivery reminders and service messages.

HIV management programmes and the associated DSP pharmacy services that provide ART to patients are complex structures, which patients often struggle to understand. Higher levels of education enable patients to understand the language and terminology used, to read literature provided by treatment programmes and to access services that are provided via complex, often new technology. The inability to understand and interact with these programmes often results in service failure, as well as patients not receiving their HIV treatment on time, which negatively affects adherence.

**Study limitations**

Although all prospective study participants were identified from medical practice patient files, and invited to participate in the study, the study relied on voluntary enrolment by participants. The anonymous self-administered questionnaire, although carefully planned to avoid information bias, did rely on patient recall. The study was conducted in a confined local area and thus the study outcomes will only be applicable to areas with similar patient profiles, demographics and socio-economic characteristics.
### Table 3: Frequency table of clinical outcomes

| Clinical outcomes | Number of patients | Percentage (%) |
|-------------------|--------------------|----------------|
| **Viral load**    |                    |                |
| Undetectable      | 15                 | 44             |
| 20–49 copies/ml   | 6                  | 18             |
| 50–999 copies/ml  | 9                  | 27             |
| > 1000 copies/ml  | 2                  | 6              |
| Missing data      | 2                  | 6              |
| **CD4 count**     |                    |                |
| 0–200 cells/µL    | 4                  | 12             |
| 201–400 cells/µL  | 8                  | 24             |
| 401–600 cells/µL  | 6                  | 18             |
| > 600 cells/µL    | 13                 | 38             |
| Missing data      | 3                  | 9              |

### Conclusion and recommendation

DSP delivery of ART medication has fared well in our study, with the majority of patients satisfied with the services. This may in part be due to the higher level of education amongst the participants of the survey. However, it is important that DSP is not considered a substitute for consulting the doctor and that any inefficiency within the system is eliminated so as not to compromise the treatment of the patient. A state-wide or nationwide multicentre trial that evaluates DSP medication delivery of ART to HIV patients should be done, to include a population of patients from lower socio-demographic groups in order to establish a relationship between patient satisfaction with DSP services and medication adherence.

**Competing interest – None.**

**Authors’ contributions** – VR conducted the research and measurements and produced the report in partial requirement for the degree of Master of Medical Sciences (HIV Medicine). OHM supervised the dissertation and drafted the manuscript.

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