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Cost Analysis of Sexual Transmitted Infection Services for High Risk Groups in Indonesia

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PKBI



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BACKGROUND: In Indonesia, the HIV/AIDS epidemic is highly concentrated among the high risk groups men who have sex with men (MSM), female sex workers (FSW) and transgenders. Implementing sexual transmitted infection (STI) services for high risk groups is considered an important and promising HIV reduction programme. Although evidence on the STI services' effect is abundant, the cost for implementing, upscaling and continuing this intervention are not known in Indonesia.

OBJECTIVE: To assess the cost of STI services (excluding HIV) provided to high risk groups being MSM, FSW and transgenders in Bandung, Indonesia in 2015 from the societal perspective. Results can be used to provide a policy advice to the non-governmental healthcare organisation Perkumpulan Keluarga Berencana Indonesia regarding the funding of HIV/AIDS interventions.

METHODS: In a 2-month observation period, societal STI services delivery cost generated by a community clinic were estimated using a micro-costing approach. Non-health care cost were estimated on the basis of a survey among 48 FSW, MSM and transgender STI clients. Furthermore, an upscale scenario has been constructed which can be used for policy advice.

RESULTS: In 2015, the clinic registered 677 high risk patient visits. Total annual societal cost of running the STI clinic equalled 5,865 US\$ which amounts to 8.66 US\$ per client visit. Of total societal cost, patient cost formed the largest share (57%), followed by clinic cost (39%) and central government cost (3%).

CONCLUSION: Dependence on donor funds is in decline and the STI services provision is financially sustainable. However, patient productivity loss and travel cost summated is considerable allowing for cost reduction possibilities in order to enlarge financial access to the intervention.

Key words: Cost Analysis, STI Services, HIV/AIDS, Policy Advice, Upscale Scenario, Indonesia

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Abbreviations

DFSW	Direct female sex workers
FSW	Female sex workers
HPV	Human papillomavirus
IDFSW	Indirect female sex workers
IDR	Indonesian Rupiah
KAP	Key Affected Population
KPA	Komisi Penanggulangan AIDS
MoH	Ministry of Health
MSM	Men who have sex with men
NGO	Non-governmental organisation
PKBI	Perkumpulan Keluarga Berencana Indonesia
STI	Sexually transmitted infection
VCT	Voluntary Counselling and Testing

Introduction

HIV/AIDS in Indonesia

The HIV epidemic in Indonesia is among the fastest growing worldwide (1). In 2012, according to the Ministry of Health (MoH), a total of 585,944 adults and children in the country were living with HIV (2). Notably, the epidemic in Indonesia is highly concentrated among the high risk groups men who have sex with men (MSM), female sex workers (FSW) and transgenders (3). In 2011, the HIV prevalence was 12%, 9%, 3% and 23% among MSM, direct FSW, indirect FSW and transgenders respectively (direct FSW work in brothels while indirect FSW work in bars and hotels) (4). These groups are also known as Key Affected Populations (KAPs).

HIV data obtained in 2013 show that the HIV epidemic in Indonesia is expected to rise the fastest among MSM (2). The MoH (2014) predicts that without additional interventions or improvements, the total number of adults and children living with HIV in Indonesia will rise to 722,007 at the end of 2016 (2).

Current HIV Response in Indonesia

In order to realise a significant reduction in new HIV infections, modelling shows that at least 80% prevention programme coverage is needed (5). Studies performed in Asia and the Pacific show that the median coverage of MSM and male/female sex workers by HIV prevention interventions is less than 60% (6). Thus, the HIV coverage during the current response is too low in these regions, including Indonesia, and forms one of the major causes of the ongoing HIV epidemic as it is unable to generate a significant effect.

Since the last decade, clear evidence has been found proving that a sexually transmitted infection (STI), excluding HIV, is a risk factor for getting HIV (7, 8). It is indicated that a STI can cause wounds and torn skin in and around the genitals making it easier for the HIV to

enter the body. Additionally, behavioural aspects such as unsafe sex and specific professions that may put one at risk for getting a STI, like belonging to a KAP, are also risk factors for acquiring HIV (9-11). For instance, in 1997-1999, syphilis prevalence in Indonesia among women aged 15-49 years was 0.8% compared to 29.7% among FSW in 2000-2001 (12). In this context, implementing STI services for high risk groups is considered an important and promising HIV reduction programme. By means of the STI services, health care workers aim to reduce the size of the HIV epidemic and its rate of spread. Already since the emergence of HIV in 1980, the importance and effect of this kind of intervention have been acknowledged by several studies (13).

Cost Analysis

Although evidence on the STI services' effect is abundant and coming from diverse regions in the world, the cost for executing this intervention are often unknown. This holds for STI services being provided in Indonesia too. An insight into the cost of STI services is, however, important for policy makers as it can be used to compare its cost to that of other HIV interventions allowing choices between the programmes to be made. Additionally, possibilities for cost reduction can be identified and cost estimates can be made during the construction of upscale scenarios.

Research Question

According to recent literature research, studies providing data on the annual cost of STI services in Indonesia are absent. The goal of this study is to assess the cost of STI services (excluding HIV) provided to KAPs being MSM, FSW and transgenders in Indonesia in 2015 from the societal perspective. The data acquired can subsequently be used to aid the non-governmental organisation (NGO) Perkumpulan Keluarga Berencana Indonesia

(PKBI), which focuses on HIV/AIDS related healthcare, during their investment decision-making process regarding the funding of STI/HIV interventions. Additionally, input for an upscale scenario can be provided. The study is part of and will contribute to the PRISMA project that aims to improve HIV/AIDS control in West Java (14).

Method

Study Setting

The study was conducted at a local community clinic site in Bandung, the capital of West Java province. Bandung has an estimated population of 2.4 million people and an HIV epidemic comparable to the national picture. The community clinic, called Klinik Mawar, is a small NGO providing medical support to all population groups but primarily high risk groups including MSM, FSW and transgenders and is hereby unique of its kind. The non-profit organisation focuses on the provision of sexual disease related healthcare resulting in mainly HIV and STI clients. Provided services include: STI services, outreach programmes (including mobile Voluntary Counselling and Testing (VCT)), HIV services (testing only), pre- and post-test counselling, teenager counselling and family planning. In addition, the clinic offers treatment of diarrhoea, influenza, fever and skin affections but these services are hardly utilized. Klinik Mawar was founded in 2002 and is currently located near the red-light district in Bandung. It is opened every working day from morning to noon. The clinic is a subsidiary of PKBI Bandung and receives grants from several donor institutions. Staff training is primarily provided by the local AIDS commission Komisi Penanggulangan AIDS (KPA) Bandung which performs and supports several STI/HIV interventions.

STI Services

After registration and signing the informed consent form, high risk patients visiting the clinic for a STI test for the first time start with a pre-test counselling session with the nurse or one of the midwives. During this session the patient's sexual background is investigated and brief information on STIs in general is provided. A physical sample is needed from every client which can either be a urethral, cervical, anal or oral swab and/or a blood sample. STIs checked for include gonorrhoea, human papillomavirus (HPV), syphilis, trichomoniasis, herpes, chlamydia, proctitis, bacteria vaginalis, cervicitis and candidiasis. All necessary lab tests are readily available in the clinic. The patient is subsequently informed about the STI test result and, in case of a positive result, receives post-test counselling. This includes information on the diagnosed STI and additional health risks, treatment plan and setting a new appointment for check-up. Occasionally, informative folders are provided. During this phase, the patient is permitted to ask any remaining questions. All newly attending patients pay a fixed amount of 5,000 Indonesian Rupiah (IDR) for the administration procedure (0.37 US\$).

Data Collection, Cost Estimation and Upscaling

The annual cost of providing STI services to MSM, FSW and transgenders were estimated from the societal perspective by using a WHO manual and additional literature based on this publication (15, 16). Health care cost (cost generated by usage of resources in the health care system) and non-health care cost (cost paid for by patients as they seek and undergo care) were distinguished. Health care cost were determined by looking into Klinik Mawar's service usage and service cost data.

Information on service usage was obtained by using the clinic's records including data on the number of STI services conducted and

equipment used. A micro-costing approach was executed to obtain the appropriate service cost data (17). Yearly salaries, consumed rent, equipment and other resources were registered based on interviews with the clinic's staff, Klinik Mawar's financial files and supply records. Besides, the allocation to STI services of all relevant cost elements was estimated and taken into account during cost calculation. Two types of health care cost were distinguished: capital and recurrent. Capital cost included building/space cost which were estimated using annual rent payment records and by taking into account the space's allocation to STI services. Equipment and furniture, being the remaining capital cost, were assessed on the basis of supply forms, price lists and staff interviews. Subsequently, capital cost were annualized based on the working life of the capital items. A discount rate of 3% was utilized (17). Personnel recurrent cost was based on the actual monthly salary, monthly incentives and annual allowances as paid out in 2015. Recurrent cost generated due to training, building operation and maintenance, provision of medicine and medical equipment usage in that year were defined using expense data from the clinic's own financial records and governmental price lists.

By conducting a survey among a sample of 48 FSW, MSM and transgender patients who visited the clinic to undergo the STI services between April – May 2016, the non-health care cost were determined. Collected data included information on the patient's monthly income, average daily working hours, monthly expenditures, travel time, travel cost and service charge. This data was used to calculate average productivity loss, travel cost and service charge per high risk client visit.

All cost were recorded in IDR and subsequently converted to US\$ using the 2015

Official Exchange rate (18). Service usage and service cost data were both registered in and analysed with Microsoft Excel 2013 (Table 1). Besides, 5 clients were interviewed about their experiences with Klinik Mawar's treatment methods. Further contextual and organisational information was obtained by performing interviews with the clinic's staff. Finally, total cost from the societal perspective consists of all cost incurred by the health care system and patient perspective. However, service charge was omitted in this summation to prevent double counting. Cost from the health care system perspective, in its turn, comprises the clinic and central government perspective cost of which the latter consists of donor funds and gifts.

Klinik Mawar is only able to offer the STI services to a small fraction of the total FSW, MSM and transgender population in Bandung (2012: 36,997) resulting in a minimal effect on the overall HIV epidemic (19). As stated previously, a prevention programme coverage of at least 80% is needed to reduce the number of new HIV infections significantly. Therefore, implementing STI services coverage upscale measures is essential. The 80% coverage scenario is constructed in this study. As Klinik Mawar is now operating at maximal capacity, upscale measures within the clinic are no option. Therefore, expansion of the STI services coverage will require founding new clinics similar to Klinik Mawar, in Bandung. During the analysis, it was assumed that these clinics use an identical treatment protocol, operate at full capacity as well and generate the same annual cost due to STI services provision. Furthermore, equal numbers of high risk patients treated are assumed for every clinic. In these calculations, start-up, inflation and construction cost are omitted.

Table 1. Annual cost of STI services provision from different perspectives (in US\$, using 2015 exchange rate).

Type of cost	Clinic perspective	Central government perspective	Health care system perspective	Patient perspective	Societal perspective
	(a)	(b)	(c) = (a) + (b)	(d)	(e) = (c) + (d)*
1. CAPITAL COST (annualized)					
1.1 Building and space	117.85	-	117.85	-	117.85
1.2 Equipment	66.46	10.79	77.26	-	77.26
<i>Sub-total capital cost</i>	184.31	10.79	195.10	-	195.10
2. RECURRENT COST					
2.1 Personnel	730.41	-	730.41	-	730.41
2.2 Training	-	61.29	61.29	-	61.29
2.3 Building operation and maintenance	67.57	-	67.57	-	67.57
2.4 Medicine	968.72	107.64	1,076.36	-	1,076.36
2.5 Other medical supplies	365.29	-	365.29	-	365.29
2.6 Service charge	-	-	-	2,628.19	-
2.7 Productivity loss	-	-	-	1,907.53	1,907.53
2.8 Travel cost (two-way)	-	-	-	1,461.53	1,461.53
<i>Sub-total recurrent cost</i>	2,131.99	168.92	2,300.92	5,997.25	5,669.98
Total cost (677 visits)	2,316.30	179.72	2,496.02	5,997.25	5,865.08
Cost per visit	3.42	0.27	3.69	8.86	8.66

* Service charge within the societal perspective is omitted to prevent double counting.

Assumptions and Sensitivity Analysis

During data acquisition a number of assumptions were made. Firstly, the treatment protocol per high risk group was assumed to be identical. Based on this, cost per high risk patient, regardless the type, are the same. Secondly, occasionally missing data was obtained using expert opinion. When essential data was not documented in writing, the correct value was retrieved by asking specific questions to experts active in the field of which data was lacking. Thirdly, certain data was extrapolated to a complete year as it was not present for all of 2015 but for 8 months only. Lastly, assumptions were made while performing cost calculations. In order to examine the influence of these assumptions on the societal cost per high risk patient visit, a sensitivity analysis has been conducted (table 2). The impact of an assumption on the societal cost per visit was determined by

calculating the deviation (in %) from the initial societal cost per visit after correction for a conceivable 15% over- and underestimation of the assumed value.

Results

Number of Patient Visits

The clinic registered a total of 677 FSW, MSM and transgender patient visits in 2015. This quantity composed of 446 FSW (65.9%), 229 MSM (33.8%) and 2 transgenders (0.28%) visits (20). Of all tested high risk patients, 76% appeared STI positive.

Table 2. Sensitivity analysis based on a conceivable 15% under- and overestimation.

Type of assumption	Assumption	Societal cost per visit after correction		Deviation from initial societal cost per visit (8.66 US\$) (%)	
		15% underestimation (US\$)	15% overestimation (US\$)	After +15%	After -15%
1. Expert opinion	"75% of all drugs in the clinic is used for the STI services."	9.02	8.30	4.16	-4.33
2. Extrapolation to a complete year based on data from 8 months	The total amount of high risk patient visits equals 677.	8.37	9.06	-3.46	4.62
3. Patient cost calculation	40% of the patients bring an accompanying individual.*	9.20	8.13	6.24	-6.52

* In the overall patient and societal cost, productivity loss and travel cost borne by accompanying individuals was included.

Cost of STI Services from Different Perspectives

As shown in table 1, the total annual cost of providing STI services from the societal perspective equalled 5,865 US\$, with an average societal cost per high risk patient visit equal to 6.88 US\$. From the overall societal expenses, the share of cost incurred by the patient was the largest (3,369 US\$, 57%), followed by that of the clinic (2,316 US\$, 40%) and the central government (180 US\$, 3%). Productivity loss (1,908 US\$, 33%) and travel cost (1,462 US\$, 26%) formed the largest solo cost units of total societal cost. This amounts to an average productivity loss and travel cost per patient of 2.82 US\$ and 2.16 US\$ respectively. Total societal cost for all FSW (N=446), MSM (N=229) and transgender (N=2) patients equalled 3,864 US\$, 1,984 US\$ and 17.33 US\$ respectively.

Patient service charge equalled 2,628 US\$ and is hereby similar to total clinic cost. Table 1 shows that total patient cost (5,997 US\$), when taken on its own, exceeds total societal cost. Total patient cost constitutes, however, only 57% of total societal cost as service charge is omitted in this calculation.

The average absolute deviation from the initial societal cost per visit after correction for assumptions made during cost calculations equalled 4.9% (table 2).

As for the upscale scenario, Klinik Mawar treats 1.8% of the total FSW, MSM and transgender population in Bandung. In order to reach a 80% STI services coverage in Bandung, 43 additional clinics identical to Klinik Mawar are necessary resulting in a total societal cost of 258,064 US\$.

Discussion Outcomes

This report estimated cost of STI services provision from the societal perspective and reports costing data from the clinic, central government, health care system and patient perspective too.

First of all, the analysis shows that the total service charge for patients (2,628 US\$) is nearly equal to total clinic cost (2,316 US\$). Thus, the provided STI services seem financially sustainable as the service charge accurately covers the cost made by the non-profit clinic. Secondly, it can be stated that Klinik Mawar is becoming more independent. The study shows that the total cost from the central government perspective, which includes all donor funds, forms only 3% (180 US\$) of total societal cost. Moreover, total clinic cost is nearly 13 times as high. This finding is supported by existing literature on Klinik Mawar, indicating a strongly reduced dependence on donor funds over the years

while the clinic remained operational and financially stable, indicating its ability to function independently (21). Thirdly, productivity loss and travel cost per patient summated turned out to be considerable (4.98 US\$), allowing potential for cost reduction possibilities to increase financial access. For example, partial travel cost compensation based on the patient's two-way travel distance and/or reduction of waiting time inside the clinic by improving client appointment scheduling efficiency are two ways to achieve such patient cost decreases. Lastly, based on client interviews, Klinik Mawar's unique treatment approach was highly appreciated. Especially the clinic's anonymity and its professional, precise and specialised operation procedure were mentioned. In addition, patients were content with the respectful and friendly personnel who expressed no STI or HIV/AIDS related stigma. Due to this, the clinic is a welcome exception, as these types of disease are still a taboo subject in Indonesia.

There are two reasons that indicate the need to scale up the intervention. First, STI transmission is still highly present within the region (76% of all tested clients turned out to be positive), highlighting the intervention's importance. The second reason to start the upscaling process is formed by STI and HIV prevalence trends in Bandung over the last years as the total amount of people suffering from a STI remained constant and a rise is seen in HIV prevalence (22). This indicates that all local STI/HIV interventions combined have not yet attained the desired result. Nevertheless, before implementation, this scenario should be confirmed in future cost analyses as it is based on considerable assumptions.

This study does not provide an insight in the cost-effectiveness of the (local) STI services, however, the cost estimates can be used in

future cost-effectiveness studies performed in this region. Such analyses are useful for policy making and while informing stakeholders on the intervention's value for money compared to other HIV prevention approaches.

Recommendations to PKBI Bandung

The described results and upscale scenario should be carefully considered by PKBI Bandung being an executive body in HIV/AIDS control in its region. The intervention is financially sustainable and as Klinik Mawar is a non-profit subsidiary, this is in line with PKBI's targets so policy adjustments are unnecessary. Furthermore, donor influence is reduced over time which proves the clinic's independence and indicates there is, again, no need for policy interference here. In contrast, patient productivity loss and travel cost counted up is considerable and thus cost reduction options should be sought. PKBI could, for instance, provide the proposed partial travel cost compensation. Also, PKBI should consider the upscale scenario as an increase in STI services coverage is desired. When doing so, PKBI should come up with the desired coverage, its financial resources available for STI services upscaling and the expected budget impact. This allows for optimisation of the upscale advice as PKBI's ideal scenario can subsequently be constructed. In order to successfully accomplish the upscale implementation, KPA Bandung, specialised in community-based HIV/AIDS interventions, should provide the essential political and social support. This assistance is crucial as not only financial but also socio-cultural obstacles must be overcome.

Limitations

This study has several possible limitations. First, the setting was limited to one community clinic in Bandung, Indonesia. As costs are likely to vary between similar settings, additional costing analyses should be considered. Second, cost savings generated by

the treatment of STIs (e.g. productivity increase) were not included. Third, patient cost due to seeking and undergoing STI services were calculated using the client's salary but it is uncertain whether all income losses were actually realised. In this way, total patient cost may have been overestimated. However, excluding patient cost completely would undervalue the client's and society's economic burden. Fourth, inaccuracies in personnel time needed to provide STI services might have influenced determining total personnel cost as it was based on present clinic staffing. This could have led to overestimation of total personnel cost and therefore requires a future time-motion study to construct a clear insight in Klinik Mawar's service capacity. Fifth, assessment of the STI services' financial sustainability from the clinic perspective did not include central government cost (donor funds) as it was exclusively based on the difference between total clinic cost and total service charge. Nevertheless, this limitation will not influence the estimation considerably as donor subsidies constitute only a small fraction of the complete cost. Sixth, start-up cost made in 2002 were not included in the cost analysis as relevant data was missing. Although, according to experts, the impact of this limitation is probably minimal as start-up cost are usually relatively minor. Seventh, the assumptions made throughout the data collection and calculation phase could have led to inaccuracies in the analysis. However, according to the sensitivity analysis, their possible influences are expected to be small (4.9% on average).

Conclusion

This analysis has provided information on STI services provision cost in a local community setting in Indonesia. Subsequently, an upscale scenario was computed which can prove useful for policy purposes. The local STI

services are financially sustainable and dependence on donor funds is in decline. On the other hand, patient productivity loss and travel cost summated turns out to be substantial, offering potential for cost reduction possibilities in order to enlarge financial access to the intervention.

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