

# Cost Effectiveness of Harm Reduction: Comparison Needle and Syringe Exchange Programme

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**Abstract**—The increasing cases of HIV/AIDs among the women and infants transmitted from the drug abuser through sharing of needles and unsafe sex had forced the Ministry of Health to initiate harm reduction programmes. A group of researchers from Universiti Sains Malaysia (USM) administered two harm reduction programmes: needle & syringe exchange programme (NSEP) and the methadone maintenance programme (MMT). The two programmes were conducted for patients at a local NGO and a public hospital in Kota Bharu, Kelantan. The efforts were not received favourably by many people because it involves the use of public funds. As accounting professionals, the first three authors were invited by USM researchers to review of the costs effectiveness of the programmes. Basically, the drug users who participated in these programmes are mostly youths and young adults who are at their prime age. In this paper the authors discuss the cost effectiveness of the NSEP and MMT intervention programmes. The paper also looks into the quality of life of the clients/patients.

**Index Terms**—Effectiveness of harm reduction, methadone maintenance therapy (MMT), needle and syringe exchange programme (NSEP), Quality of life.

## I. INTRODUCTION

Every year the Malaysian government spends millions of ringgits to combat the spreading of HIV/AIDS that can alter the economy of the country. HIV refers to Human immunodeficiency virus that can cause an individual immune system to fail and lead to life threatening infection. HIV can be transmitted through unsafe sex, contaminated needles, breast milk and transmission from an infected mother to her baby. This is the virus that causes AIDs. HIV attacks the immune system cells that are supposed to protect us from illness. AIDs stands for Acquired Immune Deficiency Syndrome. It is the advanced stage of HIV infection.

The harm reduction was introduced to reduce the spreading of the virus through the sharing of needles by drug addicts as well as the unsafe sex. These activities are normally funded by the government. One of the groups who conducted the harm reduction program was a group of researchers from Universiti Sains Malaysia (USM). To respond to the issue of “costs versus benefits”, three accounting researchers from Universiti Teknologi MARA were invited to specifically review the cost effectiveness of the harm reduction programme. In this paper, the authors

examined the costs implications of the programme and gauged them with benefits as reflected by the quality of life of HIV/AID patients, who are the subject of this study.

## II. GOVERNMENT FUNDING

In general, funding for the HIV/AIDS intervention program is provided by the government. Understandably, the public wants to know if such program is effective. The question whether the government funding contributes towards better syringe exchange program (SEP) coverage needs to be addressed. Similarly, the association between government funding and syringe coverage may be important for future HIV prevention programmes, which may indicate that those areas receiving such funding may have had early support (e.g., early SEPs) from local public health officials and possibly researchers. Such support may have helped other local and state officials understand the importance of preventing the spread of HIV and influenced their decisions to fund such programmes [1].

## III. NEEDLE SYRINGE EXCHANGE PROGRAM (NSEP)

Needle and Syringe Exchange Program (NSEP) is part of harm reduction activities conducted all over the world to combat the spreading of HIV/AIDS among drug users and people in contact with them. The first official NSEP was established in 1983 in Amsterdam. Its establishment was in response to Hepatitis B outbreak [2]. The programme involves distribution of clean syringes to drug users. In addition NSEP also provides i) advice on safer injecting practices, ii) advice on how to avoid an overdose, iii) information on safer disposal of injecting equipment, iv) access to blood-borne virus testing, vaccination and treatment services, v) help to stop injecting drugs, including access to drug treatment and encouragement to switch to non-injecting methods of drug taking and vi) other health and wealth services. Drop-in centres (DICs) are another initiative introduced to reduce Hepatitis C and Hepatitis B virus in Iran, whereby condoms and MMT were provided for the IDUs [3].

### *Advantages of NSEP*

NSEP was able to reduce HIV infection and has brought about an increase in the financial investment in eight Eastern European and Central Asia Countries between 2005-2010. The number of needles-syringes distributed and proportion of IDUs reached increased by 300%. 10% to 40% of HIV infectious was averted (D. Wilson *et al*) [4].

Apart from reducing HIV infection, the needles are provided free of charge and thus drug users do not have to

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spend money. Drug users do not have to steal money to purchase these needles and the criminal activities are controlled. It was reported that drug users in Malaysia are estimated to spend an average of between RM30 and RM50 per day or RM900 to RM1,500 per month for the drug [5].

#### IV. METHADONE MAINTENANCE PROGRAMME (MMT)

Methadone maintenance (MM) is a widely used and highly accepted medication for heroin and opiate addiction since it is safe and has relatively few side effects [6], [7]. MMT is considered as the most effective form of treatment for drugs dependence in terms of treatment and decrease in the use of illicit drugs [8], [9]. The average maintenance dose however, ranges from 60mg to 120mg depending on the quality of the heroine and the different ethnic groups [10]-[12].

##### *Advantages of MMT*

MMT was found to be helpful in improving the quality of life of outpatients in MMT clinic in Xi'an, China, during the first three months of treatment [13]. Those on methadone reported that there were improvement in their work performance or they had gained employment. However they agreed that they still need to attend frequent follow ups as part of the overall protocol of MMT.

#### V. QUALITY OF LIFE

QoL is an overarching concept, which has often been applied in health care research [14]. The Centre for Health Promotion at the University of Toronto, Canada, defines quality of life as: "The degree to which a person enjoys the important possibilities of his or her life." These 'important possibilities' are made up of various factors that can be different for different people, in different contexts. These factors can also change over time as our living situations change, and as we prioritise what is important to us. (See [www.aidsmmap.com](http://www.aidsmmap.com) issue 155 april 2006). Mental health includes depression, anxiety, vigour, happiness, schizophrenia, paranoia, panic attacks, agitation, lower self esteem and personality disorder [15].

#### VI. METHODOLOGY

Data was collected from a series of interviews conducted with the supervisors at SAHABAT and the medical officer at the Hospital Universiti Sains Malaysia. Interviews were mainly made to gather the information pertaining to the progress of the clients/patients of these programmes. There were about 113, 149 and 103 clients from SAHABAT in the NSEP, 40 clients from SAHABAT in MMT and 32 patients for MMT at the public hospital.

To determine the demographic characteristics of the client/patients, the authors obtained cooperation from the supervisors and medical officer to assist the clients/patients to answer simple survey questions.

Costs data was obtained from the annual report of SAHABAT, the medical officers at SAHABAT and Hospital Universiti Sains Malaysia. The costs information covers the

periods between 2009 to July 2013 for the NSEP whereas for the MMT both at SAHABAT and public hospital will be the average yearly cost.

#### VII. FINDINGS

##### *A. Demographic Characteristics of Clients/Patients*

Some of the clients/patients were reported to be involved in petty theft and jailed for the crimes committed. They have limited number of friends and sometimes felt alienated.

##### *B. Costs of Harm Reduction*

The above table shows that the costs incurred to run NSEP was the highest compared to the two MMT programmes. However, the costs are spread among a larger number of clients. The cost per client was therefore, only RM92.055. The reported contacts made by the outreach workers were 14,105. This would mean the costs per contact for NSEP to be RM38.56.

TABLE I: DEMOGRAPHIC CHARACTERISTICS

NSEP CLIENTS	MMT SAHABAT	MMT HUSM
<b>Demographic Characteristics</b>		
99% were male 54% within prime age (31-40 years) Users more than one type of drugs Poor knowledge about danger of sharing needles Poor knowledge on how to clean needles They shared needles 44% graduated from high school 57% have full time job	100% were male 51% within prime age (31-40 years) Users of more than one type of drugs 56% graduated from high school 50% have full time job	100% were male 76% within prime age (31-40 days) Users of more than one type of drugs 61% graduated from high school 33% have part-time job/odd job
<b>Quality Of Life</b>		
32% are satisfied with their health 47% are satisfied with their quality of lives 91% are able to perform daily tasks 26% enjoy lives 69% can stay focus	55% are satisfied with their health 47% are satisfied with their quality of lives 50% are able to perform daily tasks	56% are satisfied with their health 43% are satisfied with their quality of lives 41% are able to perform daily tasks 16% enjoy lives 41% can stay focus

The total preventive costs for the programme were also higher than the consequences costs. Applying the concept of Total Quality Management (TQM) the activities are cost effective. Here, preventive costs are deemed as quality costs whereas the continuous assessment costs are non-quality costs.

The costs of running the MMT programmes per client were high even though the total costs were lower. The consequences costs were higher than the preventive costs indicating that the programmes are not effective. Bulk of the continuous assessment cost was the administrative costs like salary of the medical officers and the methadone. The market price of methadone is RM0.50 per mg (See Table II).

TABLE II: COSTS OF HARM REDUCTION FOR THE YEAR 2012

	NSEP at SAHABA T	MMT at SAHABA T	MMT at HUSM RM
	RM	RM	RM
<b>PREVENTION</b>			
AWARENESS	256612.90	27,552.00	8,840.40
CONTINUOUS ASSESSMENT	89,342.84	120,000.00	41,981.14
	<b>345,955.74</b>	<b>147,552.00</b>	<b>50,821.80</b>
<b>CONSEQUENCES</b>			
INTERNAL	36,000.00	36,400.00	68,112.00
EXTERNAL	162,000.00	44,329.00	60,480.00
	<b>198,000.00</b>	<b>80,729.00</b>	<b>128,592.00</b>
<b>TOTAL</b>	<b>543,955.74</b>	<b>228,281.00</b>	<b>179,821.80</b>
CLIENTS	<b>5,909</b>	<b>170</b>	<b>32</b>
COST PER CLIENT	<b>RM92.055</b>	<b>RM1,342.83</b>	<b>RM5,606.68</b>

### C. Interviews

#### 1) NSEP

- Awareness on the importance of not sharing needles and willingness to seek medical help

Table III shows the rate of returned for the syringes and needles are generally above 80% indicating that most of the clients complied with the requirements. By returning the needles and syringes, they will need to get a fresh set from the outreach workers. This implies that they try not to use dirty needles when injecting heroine. However, the urgency to satisfy the craving for drugs often forced these addicts to still continue sharing needles.

TABLE III: PERCENTAGE OF NEEDLES RETURNED BY CLIENTS FOR 2009-2012

Year	Metha done	VCT	Return ed	%age	New clients	VCT
2008	77	47	163863	82	2690	47
2009	44	27	259059	90	780	27
2010	45	68	221189	92	437	68
2011	97	69	223799	99	568	69
2012	81	32	155163	86	480	32
July20 13		16 0	96,516	76	356	160
<b>Total</b>	<b>344</b>	<b>403</b>	<b>1,119,625</b>		<b>5311</b>	<b>403</b>

- Reduce stigmatisation and discrimination

The clients are very knowledgeable about the need to seek treatment if they are infected with HIV virus. They did not try to hide the status of their health. The above table shows that about 7.6% of the IDUs have volunteered to be treated for HIV/AIDS. These addicts participated in many events organised by SAHABAT.

- Quality of life has improved

The clients are able to earn income through the job placement programme conducted by SAHABAT and the other NGOs as well as INFORMM. The main activities include agriculture projects. They managed to earn income from the cultivations and selling of the products to the local buyers around Kota Bharu. In addition, some of the clients managed to kick the habits of taking drugs and have now

joined the outreach team and are paid monthly salary. They are now part of the team that sits in meetings with the police, hospitals, anti narcotic department etc.

- Reduction in new case of HIV/AIDS patients due to sharing of needles.

Fig. 3 shows that heterosexual habits are the major contributor for the spreading of HIV virus is now and not needles sharing indicating that the harm reduction programme initiated by the Government is successful.

#### 2) Methadone maintenance therapy in SAHABAT

Similar to the harm reduction practised all over the world, the harm reduction and in particular the MMT in SAHABAT had proven to be effective.

TABLE IV: CHANGE IN THE ATTITUDE OF METHADONE CLIENTS

	Percentage (%)
Return to using needles	48.4
Return to family	79.7
Friendly to the community	56.3
Working	54.7
Motivated	29.7
Self-confident	36
Mentally stable	29.7

Overall (See Table IV), there are positive changes in the attitude of the clients. The statistic above was provided in the annual report of the SAHABAT. The statistic shows that the clients had become more responsible towards themselves and their family members.

An interview was conducted with Associate Professor Dr Nasir Mohamed on the 7 April 2013. He shared with us the noble effort that he had done to reduce the spreading of HIV among the IDUs and their family or partners. What seem to be satisfying is when the clients are able to go back to their family members and lead a normal live. They were thrown out of the house when they were dependent on drugs and had committed many drug related crimes that leave the family with a lot of shame and frustration.

The clients were able to secure their jobs and are now supporting their school going children and other family members. Dr Nasir shared the story of eight (8) clients who were able to turn around and became very successful in their career. They are now driving their own cars. They used to undergo the MMT programme and slowly were able to leave the bad habits and improve their status in the society.

By securing jobs, less incident of crimes were reported. They became self sufficient and not dependent on drugs that are very expensive in the long run.

Most of the clients have improved spiritually. They used to be reluctant to perform the prayer. But now they perform the minimum five times prayer per day. The MMT programme is holistic that it is able to strengthen the clients' religious beliefs.

The lifestyles of IDUs make it impossible for them to have a long and stable relationship. They tend to shy away from the public and will be in conversation with their likes. Let alone to be married and have children. However, these

ex-IDUs became more confident and more approachable. Some even managed to get married and have a family.

When many clients successfully leave their old habits, they can collectively contribute to the economy of the state. In addition the state will spend less on cost of imprisonment.

### 3) Methadone maintenance therapy at HUSM

Interviews conducted with the medical officer revealed that 48% of the patients are satisfied with their lives while undergoing the MMT programme. This is because they are able to get the supply of methadone at regular basis. They are able stay focus to perform their jobs and become more responsible towards their family. Their family members became more receptive towards these addicts.

The patients were also given medication for other diseases when they went to get the methadone supplies. Their health improved and they felt that the quality of live improved as well. They are more confident to meet the public and became less aloof when they are among family members.

Some of the clients were able to abstain from their bad habits and became successful in their respective career. Most of the patients have their own business and this allow them to improve the family economy.

The programme taught these addicts to be more discipline since they have to adhere with the appointment dates and the methadone dosage.

## VIII. CONCLUSION

The intervention costs vary with the types of harm reduction since the activities involved in each programme are different. Running the NSEP seems cheaper compared to the methadone therapy. However, there are fewer cases of abstinence in drug consumption for NSEP compared to the MMT. The intervention programmes, both the NSEP and MMT managed to improve the quality of life of these drug addicts. Awareness of the danger of taking drugs should therefore start at primary school since there are reported cases where children at the age of 12-14 had started taking drugs. The government need to seriously have a proper prevention plan to avoid incurring a larger financial as well as non -financial consequences cost.

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