Original article

Knowledge and practice of condom in preventing HIV/AIDS infection among commercial sex workers in three small towns of northwestern Ethiopia

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Abstract

Background: HIV/AIDS is a serious problem in Ethiopia. Currently, about 2.6 million people are living with the virus. The majority of the studies on HIV/AIDS and condom use carried out elsewhere in this country have very much limited themselves in big urban centers. This study is aimed at investigation of the knowledge and use of condoms among commercial sex workers in the prevention of HIV/AIDS in three rural towns of northwestern Ethiopia.

Objectives: the objective of the study was to assess the knowledge and use of condom among commercial sex workers aged 15 to 49 in the prevention of HIV/AIDS. Moreover, the influence of selected factors on the use of condom was also aimed to be examined.

Methods: a cross-sectional study was conducted in Kola Duba, Chuahig and Dabat towns (rural towns) between October and December 1999. Data were collected from 317 commercial sex workers using a pre-tested questionnaire.

Results: the level of knowledge of commercial sex workers about HIV/AIDS (97.2%) and condom (96.2%) was stated to be very high compared to their experience of using condom (32.5%) in general and frequent use of condom (12.8%), in particular. Condoms were reported to be readily available at a fair (cheap) price. Among the partners of commercial sex workers who did not like to use condoms, the majority (81%) were farmers who come to those small towns from the surrounding rural areas. A higher condom use rate was observed as the level of educational status of commercial sex workers increased from lower to higher grades (trend test, P<.01).

Conclusion: Besides the initiation of poverty alleviation programmes, a more focused educational intervention for commercial sex workers of rural towns should be given due attention.

[*Ethiop.J.Health Dev.* 2002;16(3):277-286]

Introduction

Infection with the Human Immunodeficiency Virus (HIV) and its effect the Acquired Immunodeficiency syndrome (AIDS) are rampant problems worldwide with broad social, cultural, economical, ethical and legal implications. AIDS has become the most devastating disease humankind has ever faced.

According to the Joint United National Programme on HIV/AIDS (UNAIDS) and the World Health Organization estimate, five million people were infected with HIV in 2001 and there were about 40 million people with HIH/AIDS as of December 2001 (1). The 3 million deaths in 2001 brought the estimated total number of deaths since the beginning of the epidemic to 20 million (1).

Infection rates are not evenly distributed around the globe. Ninety-five percent of people who are infected with HIV live in developing countries. The highest proportion of people with the HIV infection is in Africa, which accounts for 13 percent of the world's population but 69 percent of the cases of HIV infection (2). In Sub-Saharan Africa, where the most severe epidemics of HIV/AIDS are to be found, UNAIDS and the World Health Organization estimate that some 28.1 million adults and children are now living with HIV (1). While the epidemic of HIV is stabilizing in many high income countries HIV prevalence rates among 15-49 year olds have now reached or exceeded 10% in 16 of the Sub-

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Saharan countries, the world's hardest-hit region (1-3).

New evidence in Africa indicates that more women than men are infected with HIV, perhaps 12 or 13 women are infected for very 10 men who are infected (2,3). Our daily experience and the current epidemiological situation also show the number of deaths due to AIDS is higher for females than males. One possible reason for this difference by gender is that women contract the disease at younger ages and are more likely to become infected during any single exposure (1-5).

HIV probably started to spread in Ethiopia in the early 1980s. The first evidence of HIV infection was found in 1984. The first AIDS case was reported in 1986 and since then the disease has been spreading at an alarming rate through out the country (4,5). Reports of the Ministry of Health of Ethiopia indicate that the average number of new AIDS cases per month were 7 in 1988, 74 in 1991, 577 in 1994 and 10,833 in 1997 (5,6). Furthermore, the number of new AIDS cases per month in the year 2000 was estimated to be 21,667 (5). Currently HIV has already infected many Ethiopians (about
2.6 million are living with the virus) and the prevalence rate has been estimated to be accordingly very high (7.3%). This puts Ethiopia among the group with the highest levels of infection (number of people living with the virus) in Africa, next to South Africa and Nigeria (4,5,7,8).

The primary mode of HIV transmission in Ethiopia is heterosexual contact and it is in this area that interventions have to be concentrated. One of the most important risk factors involved in the spread of HIV infection is having unprotected sexual contact with many different partners. Commercial sex workers (CSW) have a particularly high risk because of the large number of different partners they have (5,8,8). Surveys conducted in various big cities of
Ethiopia over the past few years have documented high rates of HIV infection among commercial sex workers. For example, in Nazreth and Bahar Dar HIV infection levels above 65-70 percent among commercial sex workers (5,8) were reported. In some other towns such as Mettu, the prevalence rates of HIV infection among commercial sex workers have either doubled or tripled within tow or three years (5,8).

It is reported that the high levels of knowledge about AIDS had little impact on behavioral change (9-14). However, as the disease is becoming more and more aggressive, leaders of some African countries have given strong and continous support to the ongoing control efforts of HIV/AIDS. For example, President Yoweri Museveni and other Ugandan leaders are doing their best in this respect and there have been healthy signs of safe sex practices (which includes greater use of condoms) in that country. As a result, HIV prevalence is declining in Uganda (1,2,5). In Asia, Thailand's similar experience demonstrates that promoting and adopting safe behaviors (such as condom use) can change the course of the epidemic for an entire nation (1,2). In Cambodia, concerted efforts driven by strong political leadership and public commitment, lowered HIV prevalence among pregnant women to 2.3 at the end of 2000 – down by almost a third from that reported in 1997 (1).

The majority of the studies on HIV/AIDS and condom use carried out in Ethiopia have very much limited themselves in big urban centres. Evidences, on the other hand, have shown that the prevalence of the disease is increasing rapidly in rural areas as well (5,8,9). According to a study conducted in 2000 in some rural areas of North Shewa, Tigray, Arsi, Bale, and South Omo, prevalence rates of HIV infection ranging from 0% to 7% were obtained (8). Currently, the prevalence rate of HIV in the areas of Ethiopia is estimated to be 5% (8). This prevailing situation in the rural communities is aggravated by the fact that
nearly one-quarter of farmers from the rural areas have sexual relationships with commercial sex workers in the nearby small towns (5). In light of this, the main objective of this study was to assess the knowledge and use of condom among

commercial sex workers aged 15 to 49 years in the prevention of HIV/AIDS in three small rural towns of northwestern Ethiopia.

Subjects and methods

A cross-sectional survey on knowledge and use of condoms was carried out among commercial sex workers of three small towns (Kola Diba, Chuahit and Dabat) of northwestern Ethiopia between October and December 1999. Kola Diba and Chuahit are found at a distance of 35 and 50 km to the south of Gondar town, respectively while Dabat is located 74 km to the north of Gondar.

At the time of the survey these study towns had a total population of 26.375, out of which 528 (2%) were commercial sex workers aged 15 to 49 years. It was also estimated that there were 6135 women aged 15 to 49 in these rural towns. Accordingly the commercial sex workers comprised about 8.6% (528 out of 6135) of the women population (aged 15 to 49 years) (6). A commercial sex worker was defined as a women who offered herself for sex with somebody (partner) in return for money. This woman who was engaged in sexual activity for payment had multiple partners and that was her main means of survival. In this study, a partner was defined as a mean who had a sexual contact with a commercial sex worker.

The eligible subjects for this study were all commercial sex workers aged 15 to 49 years residing in the three rural towns at the time of the survey. The assumptions made for the sample size calculation were: a 955 confidence interval (two-sided), an expected proportion (condom use rate) of 30% (12) and a 5% marginal error. Accordingly, the initial plan was to include a total of 323 (61.2% of the eligible women) commercial sex workers in the study. However, six of the required study subjects were not present at the time of the survey accounting for a non-response rate of (1.9%). A simple random sampling technique was used to select the study population, and accordingly, 317 (60% of the eligibles) commercial sex workers, were interviewed.

A pre-tested questionnaire which consisted of the basic socio-demographic variables and questions related to the knowledge and use of condom in the prevention of HIV/AIDS was prepared in the local language (Amharic). The questionnaire was designed in such a way that most of the questions were closed ones while a few ones were open-ended. Four final year health officer and two 12th grade complete students were involved in the data collection. During the time of data collection, the overall activity was supervised and coordinated by the investigator. This was done to ensure the accuracy of data collected by the data collectors. A reliability study was done on 32 (10%) commercial sex workers who were randomly selected.

Data collection was carried out after obtaining the consent from the local Authorities and study subjects. A brief explanation about HIV/AIDS and condom use was given to each responding commercial sex worker by the data collectors and condoms were distributed to them free of charge. This was done following the completion of interview with each study subject included in the study.

Data were entered and processed into the computer using EPI INFO version 6, 2000 software packages. Descriptive statistics and multivariate analysis (logistic regression) were used as appropriate. P-values less than or equal to 0.05 were considered significant.

Results

A total of 317 commercial sex workers aged 15 to 49 years resideing in the three rural towns responded to the questionnaire on knowledge and use of condm in the prvention of HIV/AIDS. The mean age of the study subjects was 27.7 years with a standard deviation of 8.5 years. Nearly all responding commercial sex workers (311 or 98.1%) claimed that poverty was the driving force for their engagement in such undesirable activity. Only 6 (1.9%) commercial sex workers reported that they were unable to continue their high school education (for academic reasons) and had no alternatives other than being commercial sex

workers. Two hundred seventy four (86.4%) of the total responding commercial sex workers reported that most of their partners were farmers who used to come mainly from the surrounding rural villages. The sociodemographic characteristics of these commercial sex workers are shown in Table 1.

Among the total commercial sex workers included in this study, 308(97.2%) believed in the existence of AIDS while the remaining 9 (2.8%) were not aware of the presence of the disease. There were 4 (1.3%) commercial sex
workers who reported that it was possible to be cured of AIDS. The largest number of commercial sex workers (304 or 98.7%) responded by indicating sexual intercourse to be the major mode of HIV/AIDS transmission. The use of unsterile needles, blades, etc. (105 or 34.1%) and blood transfusion (36 or 11.7%) were also reported as important routes of transmission (Table 2). Furthermore, the three most important preventive measures against HIV/AIDS perceived by the commercial sex workers were; condom use (187 or 60%), abstinence from sexual intercourse (129 or 41.9%) and staying with a single sexual partner
(27 or 8.8%).

Of the total 317 responding commercial sex workers, 305 (96.2%) reported that they had knowledge about condoms. However, the prevalence of condom use among these commercial sex workers was very low. As shown in table 3, only 39 (12.8) reported that they always used condoms, whereas the highest proportion (67.5%) of women who had knowledge about condoms responded that they did not use condoms at all. The remaining 60 (19.7%) commercial sex workers reported they used condoms less frequently. All commercial sex workers who used condoms frequently and less frequently (i.e, n=99), reported that they got condoms from private shops and/or government health institution. It was also responded by all condom users that condoms were readily available and the majority (88 or
88.9%) of them stated that the price was fair (cheep). The three important reasons for using condoms reported by the condom users were: to prevent HIV/AIDS (97 or 98%), to prevent STDs (77 or 77.8%) and to prevent unwanted pregnancies (62 or 62.6%). In this study, the proportion of commercial sex workers who admitted have had sexually transmitted diseases

Table 1: **Socio-demographic characteristics of the study subjects, northwestern Ethiopia, October - December 1999.**

Variable	Frequency (n=317)	Percent (%)
Age group (in years)		
15-19	58	18.3
20-24	82	25.9
25-29	56	17.7
30-34	54	17.0
35-39	30	9.5
40-44	22	6.9
45-49	15	4.7
Educational Status		
Can't read and write	188	59.3
Can read and write	36	11.4
Elementary school (grade 1-6)	54	17.0
High school (grade 7-12)	39	12.3
Marital status (before being a commercial sex worker)		
Divorced	221	69.7
Single (never Married)	68	21.5
Widowed	28	8.8
Living area (before being a commercial sex worker)		
Rural villages	247	77.9
Town	70	22.1
Occupation of parents (before being a commercial sex Worker)		
Farmer (subsistence)	269	84.9
Daily labourer	14	4.4
Civil servant	10	3.2
Trader (private business)	7	2.2
Others	17	5.3

(STDs) in the last five years was 13.9% (44 out of 317).

Table 2: **Responses of commercial sex workers on selected HIV/AIDS related questions, northwestern Ethiopia, October - December 1999.**

HIV/AIDS related questions	Frequency	Percent (%)
Know ledge on the presence HIV/AIDS (n=317)		
Yes	308	97.2
No	9	2.8
Cure for the disease* (n=308)		
Yes	4	1.3
No	283	91.9
Don't know	21	6.8
Perceived modes of transmission (n=308)		
Sexual intercourse	304	98.7
Using unsterile needles, Blades, etc	105	34.1
Blood transfusion	36	11.7
Breathing	5	1.6
Eating together	2	0.6
Don't know	3	1.0

* - indicates commercial sex workers who had knowledge about HIV/AIDS
* - there were 123 commercial sex workers who reported two or more modes of transmission

This study revealed that women who used to live in the rural villages before being commercial sex workers were not very knowledgeable about condoms as much as women who had grown up in urban centers. In this regard, the proportion of commercial sex workers who come from the rural villages and who had knowledge of condoms was 95.1% (235 out of 247) as compared to 100% (70 out of 70) of women who grew up in the urban centers. Various sources of information about condoms were cited and most of the commercial sex workers (98.7%) reported that they had heard (learned) about condoms from health institutions and from the radio (Table 3).

Table 3: **Knowledge and practice of condoms among commercial sex workers of three small towns, northwestern Ethiopia, October - December 1999.**

Knowledge/practice of condom	Frequency	Percent (%)
Condom is known by CSW (n=317)		
Yes	305	96.2
No	12	3.8
Source of information about Condoms (n=305)		
Health institution	120	39.4
Over the radio	134	43.9
Both health institution and over the radio	47	15.4
Other sources*	4	1.3
Ever used condoms since being CSW (n=305)		
No	206	67.5
Sometimes (less frequently)	60	19.7
Always (frequently)	39	12.8
Number of condoms used by CSW per week (n=305)		
0	206	67.5
1-10	74	24.3
>10	25	8.2
Place where condoms are obtained (n=99)		
Health institutions	39	39.4
Shops	46	46.5
Both health institutions and shops	14	14.1
Cost of condom (n=99)		
Fair (cheap)	88	88.9
Expensive	11	11.1

CSW = commercial sex worker * - indicates other sources like friends, scools

Of all the CSWs, who had the experience of using condoms, 84 (84.8%) reported that they had confrontations with partners who did not like to use condoms. Only 15 (15.2%) of the condom users said that their partners wanted to have sex without condoms. Among the partners of commercial sex workers who did not like to use condoms, the majority (81%) were farmers who used to come to these small towns from the surrounding rural areas followed by civil servants (14.3%) and traders (4.7%). It was also noted that, among the commercial sex workers who used condoms less frequently, 58 (97.6%) would like to have sexual intercourse without condoms with farmers coming from remote rural areas.

The influence of selected socio-demographic characteristics on the use of condom was further investigated using both univariate and multivariate (logistic regression) analyses. It is a

usual practice to use the classical univariate methods for initial analyses. Accordingly, the associations between the outcome variable (with two possible values) and a number of socio-demographic variables such as age, education, etc were assessed. In this univariate analysis, except "living area of women before being CSW" all other variables (age, education and partners occupation) had shown significant associations with condom use (Table 4).

Table 4: **Influence of some socio-demographic variables on the use of condom among commercial sex workers who had knowledge about condoms, northwestern Ethiopia, October - December 1999 (univariate analysis)**

Variables*	Ever used condoms		Odds ratio	P-value
	Yes	No		
Age (in year)				
15-24	55	77	1.00	=.00006(X^2 for linear trend)
25-34	36	71	0.71	
35-49	8	58	0.19	
Educational status				
Can't read and write	46	131	1.00	=.007(X^2 for linear trend)
Can read and write	14	21	1.90	
Elementary school	22	32	1.96	
High school	17	22	2.20	
Place (before becoming CSW**)				
Town	27	43	1.42	=.22 (X^2 - test)
Rural villages	72	163		
Occupation of partners				
Farmer (subsistence)	76	182	1.00	=.023 (X^2 - test)
Trader (Private business)	15	13	2.76	
Others	8	11	1.74	

* - all of the above variables refer to women who had knowledge about condoms

** - commercial sex worker

Finally, the multivariate logistic regression, which allows to relate the log odds of the binary outcome

variable to a set of explanatory variables, was applied. The yes/no type of response given by each individual CSW regarding her experience of condom since becoming a commercial sex worker was taken as the outcome variable. All the explanatory variables considered in the unviariate analysis were included in the multivariate logistic regression model. As shown in Table 5, age and level of education which showed very strong associations in the univariate analyses, remained to be strongly associated even after controlling the effect of confounders. As age increased from 15 to 49, a decreasing trend in the use of condom was observed (P<.01). A higher level of educational status was also observed to have had a positive impact on the use of condom Literate CSWs were 2-3 times more likely to use condoms as compared to the illiterate ones. On the other hand, partners occupation, which showed a significant association in the univariate analysis, fell short of statistical significance in the multivariate analysis.

Table 5: **Impact of selected socio-demographic characteristics on the use of condom among commercial sex workers who had knowledge about condoms in three rural towns of north-west Ethiopia, October – December 1999.**

Variable Coefficient (β)	Standard error of β	Odds Ratio (OR)	95% confidence interval	P-value
Age	-0.0777	.0202	0.925	(0.889, 0.963)	0.0001*
Educational status					
Can read and write	0.8533	0.4328	2.347	(1.005, 5.483)	0.0486*
Elementary school	0.8831	0.3523	2.418	(1.212, 4.824)	0.0122*
High School	0.9575	0.4376	2.605	(1.105, 6.143)	0.0287*
Place (before being CSW**)	0.1918		1.211	(0.599, 2.449)	0.5933
Occupation of partners					
Private business	0.4239	9.5512	1.528	(0.519, 4.501)	0.4419
Others	0.4429	0.4428	1.557	(0.654, 3.709)	0.3172

N.b. except for age, the order (arrangement) of each group in each variable is the same as presented in table 4. Age of each individual CSW is used (entered) in the above model.

* Statistically significant

Discussion

The results of the present study have shown that the level of general knowledge about HIV/AIDS (97.2%) and condom (96.2%) among commercial sex workers in the rural towns of northwestern Ethiopia is relatively high. However, the reported condom use rate was low. Among commercial sex workers who claimed to have had knowledge about condom, only 12.8% and 19.7% reported that they had used condoms consistently (i.e., for every act of sexual intercourse) and less frequently (sometimes), respectively. This shows that less than a third of commercial sex workers in the study areas had the practice of using condoms. Such discrepancies between a relatively high knowledge on one hand, and poor practice on the other, in relation to condom use against HIV/AIDS infection has been demonstrated by various other studies (9-13, 15) too.

Unlike the findings from other studies, all commercial sex workers in the present study who had used condoms reported that condoms were readily available. Moreover, the majority of these commercial sex workers (88 or 88.9%) felt that the price was fair/cheap (10-12). This shows that condoms are cheaply available on the market (mainly from private shops).

Commercial sex workers who had exposed themselves to such means of survival and who did not bother about the reactions of others while buying condoms from the nearby private shops. In an earlier study, embarrassment and fear in buying condoms from exposed places, such as, shops was reported to be one of the major obstacles of using condoms (16). The other important reason for the readily availability of condoms could be due to the fact that condoms

are easily obtained from the nearby government-run health institutions.

It was learned from this study that almost all of the study subjects (98.1%) were compelled to be engaged in such undesirable activity because of poverty and about four-fifths of these high risk women used to live in the rural villages surrounding the towns. It has been a usual phenomenon to see the flow of women from the rural villages to the nearby towns in order to earn a living. Women in general and CSWs in particular are economically, culturally and socially disadvantaged. Being outside the structures of power and decision making, they may be denied the opportunity to participate equally within the community. This calls for the development of poverty alleviation programmes among the women of the countryside so that migration to towns in search of better living can be reduced.

It is reported elsewhere in Ethiopia that the prevalence of STDs is very high and this condition was demonstrated in this study (5, 10-12). In fact, the yearly prevalence of STDs was among the top ten diseases of the study areas as reported by the respective health institutions (17). If this high magnitude of STDs is to be coupled with the current
HIV/AIDS epidemic, future economic and social implications will be severe and devastating.

It is true that abstinence and staying with single partner would contribute a lot in reducing incidence of HIV/AIDS infection (18).
However, it is very unlikely that these high-risk women will abide by the above principles for the very reason that they have to feed themselves and their dependents by selling sex. On the other hand, vaccines (or drugs which cure the disease) are not likely to be ready for mass use within the next 5 to 10 years (5, 8). Therefore, besides the development of job opportunities, use of condom continues to be the most effective way of protecting these women against HIV infection (18-19). The introduction of female condom which is not so far known in the present study area could also be an effective method of controlling the spread of this disease. It is true that the female condom is relatively more expensive than the male condom (20). However, this should not be a barrier to use the female condom particularly among the CSWs. In fact, the use of female condom will empower women in their negotiations with men over sexual matters. The level of education attained by the commercial sex workers was significantly associated with the practice of condom (Tables 4, 5). As we go to the higher level of educational status, the proportion of condom users increased accordingly. A closer look at educational status of the commercial sex workers revealed the fact that the majority of the illiterate women (those who could not read and write) came from the rural villages. It is this group of women who had mostly practiced unsafe sex. Therefore, the absence of formal education among the great majority of commercial sex workers who came from the rural villages had negatively affected the use of condom.

It is very interesting to note that quite a pronounced number of commercial sex workers would allow unprotected sexual intercourse without condoms with farmers coming from rural villages. According to the belief of this group of women, farmers coming from rural villages are free of the virus. This is a dangerous misconception that necessitates a more focused and frequent educational intervention. Another equally important issue that should be given due attention is the negative attitude of farmers to the use of condoms with commercial sex workers who are identified as the highest risk group. This was clearly demonstrated in the present study. The fact that nearly one-quarter of farmers have sexual relationships with such commercial sex
workers (5) will complicate the problem. Thus, even the wives of these farmers who are faithful to their husbands will be at risk of acquiring HIV infections. In this regard, a number of other studies have demonstrated similar findings (9, 21-22).

Age of commercial sex workers was

significantly associated with condom use. It was observed from both analyses (univariate and multivariate) that the relatively older women (CSWs) were reluctant to use condoms. Assessment of partners occupation which was largely dominated by subsistence farming showed a significant association with condom use in the univariate analysis (Table 4). However, as indicated in Table 5, this significant association was not maintained in the multivariate analysis. This could probably be due to the effects of confounding variables included in the model. On the other hand, although women who had grown up in the towns (before being commercial sex workers) tended to be more informed about HIV/AIDS and condom than women who came directly from the rural areas, there was no significant difference in their current use of condom. This commonly encountered reality may be indicative of the fact that behavioral changes do not soon follow awareness, particularly in this group of women whose main objective is to earn money and make a living.

The possibility of under-reporting of the eligible women in this study cannot be ruled out. This is in particular true because of the nature of the subject matter under investigation. In most communities, sensitive issues like AIDS and information on personal matters like sexual practices are normally kept secrete. The same is also true with the number of CSWs who have developed sexually transmitted diseases. However, despite such shortcomings, this study has provided an insight into the present problem (HIV/AIDS and condom use) among the rural towns and villages of northwestern Ethiopia. Accordingly, on the basis of the findings of the present study, the following recommendations are forwarded: 1. Commercial sex workers of the study areas (related areas) should be convinced to strictly adhere to the principle of "no condom no sex". The introduction and use of female condom should also get due attention.

2. Periodic (monthly, etc) check-ups for STDs should be made compulsory for all commercial sex workers. Voluntary counseling and testing for HIV should be made available for all CSWs.
3. Poverty alleviation programmes which would genuinely and practically change the lives of the great majority of commercial sex workers should be initiated. This measure will undoubtedly reduce the number of rural women migrating to the already congested small towns.
4. Health Education on HIV/AIDS through the mass media, should be made accessible to the rural population. In this regard, radio programmes about HIV/AIDS and its preventive measures could be prepared in different languages. This of course requires to make radios available at a relatively low price for those people living in the rural areas. In particular, farmers who are married should consistently and relentlessly be advised to be faithful to their wives and unmarried ones should be encouraged to avoid pre-marital sex.
5. The underutilized institutions like the church and peasant associations should be involved in tackling the present challenge.

Acknowledgements

First and foremost I am very thankful to the commercial sex workers of Dabat, Kola Diba and Chuahit towns for consenting and participating in this study. The Gondar College of Medical Sciences, the Zonal Health
Department of Gondar and the Datat district Health office are highly acknowledged for their logistic support. My gratitude also goes to Dr. Ovnair Sepai for her constructive comments and suggestions on the draft of the paper and for taking time out from her busy schedule to read it.

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