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Factors associated with uptake of community client-led ART delivery model at Mulago adult HIV clinic _ Mulago National Referral Hospital

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Abstract: Community Client Led ART Delivery (CCLAD) model in Uganda refers to self-formed groups of six to eight stable Anti Retro viral Therapy (ART) patients from the same community or area. Members go in turn for medication refill for all members of the group. As this reduces facility visit burden for each patient, this model of care shows greater impact in terms of access and coverage. To identify factors associated with the uptake of CCLAD model at Mulago Adult HIV clinic between May andJune, 2019,descriptive as well as analytical cross-sectional design were used, both quantitative and qualitative in nature. Random sample of 246 patients was used. Questionnaire, focus group discussion guide and interview guide were used for data collection. Uptake of CCLAD model was 10%, which is lower than the national uptake (17%). Uptake was associated with health-care worker and individual-related factors like having no concerns about getting their ARVs from the community (COR = 5.5, AOR = 6.1, $p = 0.002$) and having the component of CCLAD model in the education talks (COR = 2.1, AOR = 2.1, $p = 0.000$), among other associated factors. Qualitative interviews affirmed these findings. Implementation of this model requires interventions like health education talks and prompt referrals of clients to the model.

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Dr Omona Kizito is a Medical Doctor and Lecturer in Uganda Martyrs University, Faculty of Health Sciences (FHS), Kampala, Uganda. He holds a PhD in Mgt [Healthcare Mgt], Master of Science in Health Services Mgt (MSc. HSM), Master of Science in Monitoring and Evaluation (MSc. M & E), Post Graduate Diploma in Project Planning and Mgt (PGD PPM), Post Graduate Certificate in Monitoring and Evaluation (PGC M & E), and Bachelor of Medicine and Bachelor of Surgery (MBChB). He is currently engaged in teaching Public Health and Health Services Management at Undergraduate and Post-graduate Level, Research Supervision in the said areas and levels and community engagement, among others. His major Research areas are; Clinical Researches, Public Health and Maternal and Child health Research and others.

Omona Kizito

PUBLIC INTEREST STATEMENT

Community-based service delivery model commonly known as Community Client Led ART delivery (CCLAD) model in Uganda, refers to self-formed groups of six to eight stable ART patients from the same community or area. The members of the group rotate the responsibility of going to the ART clinic to collect their medication for purpose of refilling for all members of that group. This reduces the number of facility visits for each patient. Group members meet at the community level before each appointment for adherence support to each other and treatment outcomes monitoring by group members. Available evidence showed that there is a greater impact, in terms of better access and wider coverage, with services that are community-led compared to other types of service provision models. This kind of model has better health outcomes and can lead to the rapid scale-up of interventions through demand creation.

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1. Introduction

1.1. Background to the study

The community-based service delivery model, commonly known as Community Client Led ART Delivery (CCLAD) model in Uganda, refers to self-formed groups of six to eight stable Anti Retro viral Therapy (ART) patients from the same community or area (Grimsrud et al., 2017). The members of the group rotate the responsibility of going to the clinic to collect the medication refill for all members of the group to reduce the number of facility visits for each patient (Prust et al., 2017). Available evidence has shown that there is a greater impact, in terms of better access and wider coverage, with services that are community-led compared to other types of service provision (Rodriguez-García et al., 2013). Further evidence has also shown that community-based service delivery has better health outcomes (Zachariah et al., 2009) and can lead to the rapid scale-up of interventions through demand creation (Kerrigan et al., 2015; Mburu et al., 2012). Community client-led ART Delivery model improves the delivery of prevention, treatment, care and support in the HIV treatment cascade. This comes as a result of the actions of communities in providing HIV-related care services, particularly noteworthy, as they bring knowledge of the complexities and specifics of lives, rights and needs, enabling access and trust from highly marginalized communities (Kerrigan et al., 2015).

The global HIV service delivery programs have expanded to include differentiated care framework, which proposes the delivery of care in facilities for those who need clinic-based services, with less frequent clinical contact for those who are stable (UNAIDS, 2015). Differentiating between the service needs of those who are unwell, either because they present late for care or due to treatment failure and those who are stable on ART, and determining where and how those services are to be delivered are key to maximizing treatment outcomes and efficiencies across the board (World Health Organization [WHO], 2015).

In sub Saharan Africa, there has been successful implantation of Community ART Group (CAG) model as one of such example of a differentiated model of care in Mozambique and Malawi, with the aim of delinking clinical consultations and ART refills among stable patients on ART. This was done although there has been a noted slow uptake of such services (Nundwe et al., 2017). Uptake of CCLAD model still remains low across countries (Kiggundu et al., 2018). A study done in Malawi (Prust et al., 2017) has shown that only 6.0% of patients in facilities that offered the Community ART Groups model similar to the CCLAD model in Uganda were enrolled into this model. Across all the board, when using the criteria and considering the length of patients in clinics, about 80% of patients in most ART treatment centers are presumably stable and qualify to enroll into this model of care (Grimsrud et al., 2017).

Uganda is one of the countries in the world that has developed promising approaches to maximizing delivery of HIV services and matching them to client needs (Kiggundu et al., 2018). For clients from remote areas, a differentiated approach could be utilized to bring treatment closer to them and reduce or eliminate their transport costs/times (UNAIDS, 2015).

1.2. Secondary objective

The major goal of the study was to describe the factors associated with the uptake of CCLAD model at Mulago Adult HIV clinic in Mulago National Referral Hospital between May 2019 and June 2019.

2. Methodology

2.1. Study setting
The study was done in Mulago National Referral Hospital.It is located on Mulago Hill in the northern part of the city of Kampala, immediately west of the Makerere University College of Health Sciences. It is approximately 5 kilometers by road, north-east of Kampala's central business district. The geographical coordinates of the hospital are 0°20′16.0″N, 32°34′32.0″E (Latitude: 0.337786; Longitude: 32.575550) (Google, 2020).

  The study was conducted at Mulago Adult HIV clinic, a care and treatment Center of Excellence for HIV which is supported by the Makerere University Joint AIDS Program (MJAP). The clinic offers comprehensive HIV care to over 16,000 patients in care, all of whom are on antiretroviral therapy (MJAP Annual Report 1 April 2015 to 31 March 2018).

2.2. Study design
Descriptive as well as analytical cross-sectional study design were used. It was both quantitative and qualitative in nature, hence mixed methods.

2.3. Study population
The study targeted adult HIV patients who are stable on ART and receiving ART from Mulago adult HIV clinic. Selected service providers at the Mulago adult HIV clinic including staffs from the management section, clinicians like doctors, nurses, ART counselors and peer educators participated in the study.

2.4. Sample size
Sample size was calculated using Kish Leslie Single proportion model, which generated a sample size of 246 participants. Three focus group discussions and 10 key informants' generated qualitative data were used, as well.

2.5. Sampling procedure and tools
Systematic random sampling was used. Quantitative data were collected using structured questionnaire. Focus group discussion guide collected qualitative data from patients and interview guide collected qualitative data from key informants.

2.6. Data analysis
STATA version 10.0 software was used to analyze data at univariate, bivariate and multivariate levels.

2.7. Ethical issues
Permission to carry out the study was obtained from the Department of Health sciences, Uganda Martyrs University, Mulago Adult HIV clinic administration and the clinic manager at Mulago Adult HIV clinic. Voluntary informed consent of the respondents was obtained through a guided written informed consent (in English or Luganda the common local language used) explaining the objectives and benefits of the study. The respondents then signed or put a thumb print on the consent form after voluntarily accepting to participate in the study.

3. Results

3.1. Socio-demographic characteristics
The socio-demographic characteristics of the respondents were assessed ranging from age, gender, marital status, education level, employment status and household living status at the time of participation in the study. A total of 246 participants were interviewed, with 70 (20.5%) males and 176 (71.5%) females. The mean age was 39 years and a standard deviation (SD) of 8.9. The respondents who were married were 130 (52.8 %). Most of the respondents had attained low

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Table 1. Socio-demographic characteristics of respondents		
Characteristics	Frequency (*n* = 246)	Percent (100%)
Gender	70	28.5
• Male	176	71.5
• Female		
Marital status	116	47.2
• Unmarried	130	52.8
• Married		
Education level	143	58.1
• Low level	103	41.9
• High level		
Employment status	184	74.8
• Employed	62	25.2
• Unemployed		
House hold living status	118	48.0
	117	47.6
• Own house	11	4.5
• Rented house		
• Stay with friends		

level of education (143, 58.1%); that is, no education and primary education. Most of the partici-
pants (184, 74.8%) were employed, whereas, almost half of the participants (118, 48.0%) were
living in their own houses. Results are presented in TableTable 1.

3.2. Uptake of community client led ART delivery (CCLAD) model
Uptake of CCLAD model in this study was at 25 (10%) with the majority of the participants (221,
90%) involved in the other models of care at the clinic.

Qualitative interviews revealed that participants had fears of being talked about lacking coop-
eration among individuals. In their own words, some participants had the following to say:

> [...] Although health workers think that our fellow patients will not talk about us, it is not
> always the case, some of our fellow clients go ahead to talk about us in the community and
> will always tell others that we take HIV drugs. **FGD 2**

Another client in a separate FGD where clients where both facility and CCLAD clients were mixed
expressed lack of cooperation among individuals as the likely reason why some patients fear to
form the CCLAD groups since they do not know each other at the beginning and they fear clashing
in the community. These were the concerns in his own words:

> At one time I had lost a relative and I went for the burial in the village and this was the time
> for gathering as a group to pick the medicines from one of our members and I had explained
> to the group leader but when I came back, he was rude to me and threatened to take the
> medicines back to the clinic so that I can pick them myself, this demotivated me a lot and I
> almost thought I should leave this group [...]. **FGD 3**

Other than CCLAD, most key informants (8 out of 10) mentioned that an alternative model called
First Truck Drug Refill (FTDR) was more preferred by clients. FTDR is commonly known as POV and it
is an alternative model of care in Mulago National Referral Hospital.

A peer educator interviewed said this in her interview;

> [...] While trying to convince clients to take up CCLAD, they insist to remain on POV since they only come with their card alone and pick their medicine without anyone noticing or knowing their status. **FGD 1**

All the key informants in the interviews asserted that this model was still new in the eyes of many patients and that they have not yet understood the way it works. They added that majority of patients are still struggling with stigma and fear of disclosure of their sero-status. This was emphasized by one key informant who stressed it as follows:

> [...] Some patients do not want their fellow community members to know their status even if they are of the same HIV status and convincing such clients to join CCLAD becomes hard on our side as health-care providers. **KI 8**

Another key informant had this to say about what patients say whenever they encourage them to join the community groups:

> Some patients have a feeling that being far from your health workers or your doctors as it is in the community can be equated to a death sentence [...]. **KI 6**

3.3. Socio-demographic factors associated with uptake of CCLAD model

All the socio-demographic factors were analyzed using the bivariate analysis to determine if there were any of these factors that had any significant association with uptake of CCLAD model as seen from Table Table 2:

Findings in Table Table 2 did not show any significant association of socio-demographic characteristics and the uptake of CCLAD. Female participants were, however, more likely to take up CCLAD model compared to their male counterparts (COR = 1.7, 95% CI 0.60–4.63, p = 0.327). Participants who were unemployed were 1.5 times more likely to take up CCLAD model (odds ratio 1.5, 95% CI 0.595–3.56, p = 0.411). Those who were married or in a relationship were also more likely to take up CCLAD model (COR = 1.2, 95% CI 0.501–2.649, p = 0.739).

3.4. Health-care factors associated with uptake of CCLAD model

To determine the health-care factors associated with uptake of CCLAD model, a bivariate analysis was done and the results are shown in Table Table 3;

Table Table 3 shows that a number of health-care workers' factors were associated with uptake of CCLAD model. They included: participants feeling comfortable when referred to get ART services from the community (COR = 73.2, 95% CI 16.414–326.594, p = 0.000). Respondents who felt comfortable being referred were 73 times more likely to take up CCLAD as opposed to those who were uncomfortable. Others associated factors were: encouragement by health workers to join CCLAD model (COR = 2.3, 95% CI 0.003–2.189, p = 0.000), incorporation of the component of CCLAD model in the health education talks (COR = 2.1, 95% CI 0.031–4.594, p = 0.008) and having been referred for ART services in the community (COR = 1.1, 95% CI 0.003–1.031, p = 0.000). All these factors were positively and significantly associated with uptake of CCLAD model.

3.5. Individual factors associated with uptake of CCLAD model

Bivariate analysis to ascertain individual factors associated with uptake of CCLAD was run and the results are shown in Table Table 4.

Table Table 4 shows that having no concerns about getting drugs from the community-like stigma was significantly and positively associated with uptake of CCLAD model (COR = 8.3, 95% CI2.4–28.363, p = 0.001). The respondents who were not concerned were eight times likely to take up CCLAD. Besides, having fears about getting drugs from the community was associated with uptake of CCLAD (COR = 5.5, 95% CI 1.826–16.523, p = 0.002) and this was statistically significant. Respondents who did not have fears where five times more likely to take up CCLAD (COR = 5.5). In

Table 2. Bivariate analysis of socio–demographic factors associated with uptake of CCLAD

Characteristics	Uptake of CCLAD		Total (N = 246)	COR	95% CI	p-Value
	Yes (n = 25)	No (n = 221)				
	Freq (%)	Freq (%)	Freq (%)			
Age in years • Mean (SD)	37 (8.8)	39 (8.9)	39 (8.9)	1.0	0.924–1.02	0.239
Gender • Male • Female	5 (20) 20 (80)	65 (29.4) 156 (70.6)	70 (28.5) 176 (71.5)	1 1.7	0.60–4.63	0.327
Marital status • Unmarried • Married	11 (44) 14 (56)	105 (47.5) 116 (52.5)	116 (47.2) 130 (52.8)	1 1.2	0.501–2.649	0.739
Education level • Low level • High level	14 (56) 11 (44)	129 (58.4) 92 (41.6)	143 (58.1) 103 (41.9)	1 1.1	0.479–2.536	0.82
Employment status • Employed • Unemployed	17 (68) 8 (32)	167 (75.6) 54 (24.4)	184 (74.8) 62 (25.2)	1 1.5	0.595–3.56	0.411
Household living status • Rented house • Own house	13 (52) 12 (48)	115 (52) 106 (48)	128 (52) 118 (48)	1 1.0	0.438–2.292	0.997

Freq = Frequency, COR = Crude Odd Ratio, CI = Confident Interval.

Table 3. Health-care factors associated with uptake of CCLAD model

Characteristics	Uptake of CCLAD		Total (N = 246)		COR	95% CI	p-Value
	Yes (n = 25)	No (n = 221)					
	Freq (%)	Freq (%)	Freq (%)				
Health care workers play a big role						-	-
• Yes	25 (100)	181 (81.9)	206 (83.7)		1		
• No	0 (0)	40 (18.1)	40 (16.3)		1.0		
Ever encouraged by health workers						0.003–2.189	0.000*
• Yes	24 (96)	83 (37.6)	107 (43.5)		1		
• No	1 (4)	138 (62.4)	139 (56.5)		2.3		
Frequency of education talks						0.79–4.186	0.160
• Sometimes	11 (44)	130 (58.8)	141 (57.3)		1		
• Daily	14 (56)	91 (41.2)	105 (42.7)		1.8		
CCLAD model in education talks						0.031–4.594	0.008*
• Yes	23 (92)	135 (61.1)	158 (64.2)		1		
• No	2 (8)	86 (38.9)	88 (35.8)		2.1		
Referred to the community						0.003–1.031	0.000*
• Yes	21 (84)	10 (4.5)	31 (12.6)		1		
• No	4 (16)	211 (95.5)	215 (87.4)		1.1		
Feelings about referral to community						16.414–326.594	0.000*
• Uncomfortable	2 (8)	191 (86.4)	193 (78.5)		1		
• Comfortable	23 (92)	30 (13.6)	53 (21.5)		73.2		

(Continued)

Table 3. (Continued)

Characteristics	Uptake of CCLAD		Total (N = 246)		COR	95% CI	p-Value
	Yes (n = 25)	No (n = 221)					
	Freq (%)	Freq (%)	Freq (%)				
CCLAD model decongests the clinic						0.037–2.207	0.231
• Yes	24 (96)	193 (87.3)	217 (88.2)		1		
• No	1 (4)	28 (12.7)	29 (11.8)		0.3		

Freq = Frequency, COR = Crude Odd Ratio, CI = Confident Interval.

Table 4. Individual factors associated with uptake of CCLAD model

Characteristics	Uptake of CCLAD		Total (N = 246)	COR	95% CI	P-value
	Yes (n = 25)	No (n = 221)				
	Freq (%)	Freq (%)	Freq (%)			
Duration in the clinic in years						0.523
• 1 to 3	7 (28)	76 (34.4)	83 (33.7)	1	0.539–3.369	
• 4+	18 (72)	145 (65.6)	163 (66.3)	1.3		
Other type of care in clinic					-	-
• Yes	0 (0)	32 (14.5)	32 (13.0)	1		
• No	25 (100)	189 (85.5)	214 (87.0)	1.0		
Disclosed to any relatives						0.451
• Yes	23 (92)	211 (95.5)	234 (95.1)	1	0.379–8.89	
• No	2 (8)	10 (4.5)	12 (4.9)	1.8		
Fears about CCLAD model						0.002*
• Yes	4 (16)	113 (51.1)	117 (47.6)	1	1.82–16.523	
• No	21 (84)	108 (48.9)	129 (52.4)	5.5		
Concerns getting ARVs in community						0.001*
• Yes	3 (12)	117 (52.9)	120 (48.8)	1	2.4–28.363	
• No	22 (88)	104 (47.1)	126 (51.2)	8.3		
Stigmatized by others						0.147
• Yes	11 (44)	131 (59.3)	142 (57.7)	1	0.805–4.266	
• No	14 (56)	90 (40.7)	104 (42.3)	1.9		

(Continued)

Table 4. (Continued)

Characteristics	Uptake of CCLAD		Total (N = 246)	COR	95% CI	P-value
	Yes (n = 25)	No (n = 221)				
	Freq (%)	Freq (%)	Freq (%)			
Benefits of being in CCLAD model	0 (0)	30 (13.6)	30 (12.2)	1	-	-
• None	25 (100)	191 (86.4)	216 (87.8)	1.0		
• Some benefits						

Freq = Frequency, COR = Crude Odd Ratio, CI = Confident Interval.

addition, long duration in the clinic of more than 4 years was somehow associated with likely uptake of CCLAD model (COR = 1.3, 95% CI 0.539–3.369, *p* = 0.523); however, this too was not statistically significant.

Multivariate analysis of all the factors are shown in Table Table 5.

Table Table 5 shows that participants who did not have concerns about getting their ARVs from the community were more likely to take up the model (COR = 5.5, AOR = 6.1, 95% CI 1.906–19.288, *p* = 0.002) and this was statistically significant. Besides, participants who had the component of CCLAD model in the education talks while they attended the clinic were also more likely to take up the CCLAD (COR = 2.1, AOR = 2.1, 95% CI 1.043–5.396, *p* = 0.000) and this was also statistically significant.

3.6. Modalities to increase uptake of CCLAD model
Findings from the qualitative interviews on modalities to increase uptake of CCLAD model pointed to the need for increased sensitization to patients to fully understand how this model works, its

Table 5. Multivariate analysis of the different factors associated with uptake of CCLAD				
Factor	**COR**	**AOR**	**95% CI**	***p*-Value**
Age in years • Mean (SD)	0.971	0.965	0.906–1.027	0.261
Gender • Male • Female	1 1.7	1 2.0	0.52–7.751	0.312
Marital status • Unmarried • Married	1 1.2	1 0.8	0.332–2.156	0.727
Formal educational level • High level • Low level	1 1.1	1 1.1	0.413–2.742	0.898
Employment status • Employed • Unemployed	1 1.5	1 0.8	0.237–2.564	0.682
House hold living status • Rented house • Own house	1 1.0	1 1.1	0.357–3.262	0.892
Component of CCLAD model in education talks • No • Yes	1 2.1	1 2.1	1.043–5.396	0.000*
Concerns about getting your ARVs from the community • Yes • No	1 5.5	1 6.1	1.906–19.288	0.002*

AOR = Frequency, COR = Crude Odd Ratio, CI = Confident Interval.

benefits and how the different anticipated challenges can be solved. One of the clinicians elaborated on this in his own words as below:

> CCLAD is a good model of care but we as health-care providers need to understand that it is new to clients and taking it up cannot be a mare walk over because clients always have issues. We have clients who move more than 300 kms to come to this facility for their medications and in such a case you can guess how many health facilities they have passed to come to Mulago, such patients may not necessarily take up community models even if they proved to be 100% good [...]. **KI 5**

Findings from the FGDs also expressed the need for more thoughtful interventions that allow patients to have more choices of accessing drugs from the communities. One of the clients in the focus group discussion of CCLADs stated like this:

> [...] I have observed that most of us who are in the community are those clients who used to attend the clinic in the early morning hours when those health education talks take place which is an indication to me that probably those who come in the afternoon miss these sessions thus cannot go for this model. **FGD 2**

4. Discussion

Uptake of CCLAD model was low in this study at only 10% and this was lower than that of the national uptake of the same model at 17% (Kiggundu et al., 2018). One of the hindrances to the uptake of such models has been reported to be few stocks of drugs as reported by the national system in 2017. This is an issue that has been eliminated of late but which does not occur to the Mulago adult HIV clinic which is donor supported. Besides, this model has been in existence at this clinic for close to two years; this means a lot more could have been expected in terms of uptake for such a long time. The inefficiencies hindering uptake of this model need to be addressed so that more clients can be put on the model.

Findings from this study showed that long waiting time was highly associated with uptake of CCLAD model in our study findings. This was also coined out by all the participants in both the FGD's and the health-care provider interviews that engaging in CCLAD model reduces some one's waiting time. In the same way, Macintyre and others in their study observed long waiting time as one of the barriers to the uptake of health-care service deliveries (Macintyre et al., 2014).

Having been referred to the community by a health-care worker was significantly associated with uptake of CCLAD model in this study. There is need to put more sensitization programs targeting health-care workers, so they can easily adopt the implementation of this model. This can only be achieved if the health workers are well empowered to do so. This is similar to the findings of UNAIDS in their report in Malawi which realized the negative perception of increased workload by health-care workers and concluded by saying that this affected the implementation of this model (UNAIDS, 2016)

Findings of FGDs in this study highlighted that patients who had not disclosed had issues with stigma and discrimination, privacy and confidentiality as some of those who had not yet well embraced the CCLAD model of care. Similarly, in a study done in Tanzania, participants feared to be tested from their communities so as not to be labeled as HIV-positive and eventually be stigmatized in the community (Layer et al., 2014).

Participants who had health education talks with the component of CCLAD model incorporated into health education talks were more likely to take up the CCLAD model of care (COR = 5.5 and AOR = 6.1). These findings confirm with those from the qualitative interviews with FGDs and KIs who stressed the need for increased sensitization of patients about CCLAD model. Likewise, studies done in sub Saharan Africa found out that client–provider relationship increases patients'

understanding through asking questions and this greatly affects client satisfaction leading to up take of services (Gourlay et al., 2013).

Findings from the individual factors in this study showed that participants who did not have any concerns about getting drugs from the community were positively associated and statistically significant to take up the CCLAD model of care (COR = 5.5, AOR = 6.1, 95% CI 1.906–19.288, p = 0.002). Concerns could be factors like stigma and disclosure issues whereas fears could be mistrust of the model or even lack of information about the model. In related findings, reports of conflicts among group members and patient concerns about privacy were registered and these hampered the progress of this model (Chimbwndira & Eliya, 2016). Another study also found out that some Community ART Group (CAG) had collapsed because of interpersonal conflicts such as tensions among friends (Myer et al., 2017).

Qualitative interviews among the FGDs and the KIs observed a gap in the way health education talks are conducted in the clinic. The fact that its only patients who come in the morning hours that receive regular health education talks indicates that most patients lack information about this model; this explains the low uptake of this model. Consistent with studies from Saharan Africa, Gourlay et al. (2013) emphasized how effectively and efficiently health-care provider information greatly impacts of what service the client takes up.

5. Conclusion

These findings, therefore, bring forth the necessities required for the HIV clinics to enhance the uptake of this model of care but also practice what has been discovered as a best fit for each individual client than thinking that every stable client needs to be in the CCLAD model.

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Consent for publication

The authors of this manuscript do consent for publication with Cogent Medicine Journal under the provided terms and conditions.
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We declare no conflict of interest, in what-so-ever way.

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