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ORIGINAL PAPER

Barriers to colorectal cancer screening in Ghana: a qualitative study of patients and physicians

A. Lussiez[1,7] · C. K. Dally[2,3] · E. A. Boateng[2] · K. Bosompem[2] · E. Peprah[2] · L. Hayward[4] · L. Janes[4] · M. Byrnes[1] · A. Vitous[1] · A. Duby[1] · C. Varlamos[1] · L. Ma[1] · D. Darkwa[2] · F. Aitpillah[2] · K. C. Gyasi-Sarpong[3] · B. K. Opoku[3,5] · K. Raghavendran[1,6] · G. Kwakye[1,6]

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Abstract

Purpose The incidence of colorectal cancer (CRC) in Ghana has increased eightfold since the 1960s. In 2011, national guidelines were set forth recommending all patients aged 50–70 years old undergo annual CRC screening with fecal occult blood testing (FOBT), but adherence to these guidelines is poor and screening rates remain low for unclear reasons.

Methods We performed semi-structured interviews with 28 Ghanaians including physicians ($n = 14$) and patients ($n = 14$) from the Komfo Anokye Teaching Hospital in Kumasi, Ghana, to better understand the factors driving screening adherence and perceived barriers identified in an earlier quantitative study.

Results Participants reported sociocultural factors such as reliance on alternative medicine or religion, lack of education, and financial burden as community-level barriers to CRC screening. At the system level, screening was limited by insufficient access to FOBT as well as a perceived lack of national prioritization. This was described as inadequate efforts from the Ministry of Health regarding national education as well as lack of incorporation of CRC screening into the National Health Insurance Scheme.

Conclusion Several community- and system-level barriers exist to widespread screening of CRC in Ghana. A multi-level approach will be required to improve rates of CRC screening and ultimately reduce the burden of CRC in Ghana.

Keywords Colorectal · Gastrointestinal · Oncology · Education · Global surgery · Training

Introduction

Colorectal cancer (CRC) is the third most commonly diagnosed cancer globally [1, 2]. In 2020, approximately 1.9 million people were diagnosed with colorectal cancer [3]. Traditionally, CRC has been primarily considered a disease of developed countries, but rates are now rising in developing countries [3–6]. In Ghana, the incidence of CRC remains low at 3.9 cases per 100,000 (compared to 25.6 cases per 100,000 in the United States), but has increased several fold since the 1960s. Moreover, the incidence of CRC in Ghana is expected to continue to climb given Ghana's aging population, rising life-expectancy, and ongoing adoption of Western habits [7–9]. Unfortunately, most patients present late in their disease course resulting in a 16% overall 5-year survival rate [10]. The comparative estimate for 5-year survival in the United States (US) for all stages combined is 65% [3]. Early detection of CRC is critical for Ghanaians given the dramatic decrease in survival rates from Stage I (90%) to Stage IV (0%) [10]. As such, to address the increasing burden of CRC in Ghana, in 2011, the Ministry of Health targeted CRC as an area for improvement and set forth a recommendation that all patients aged 50–70 years old were screened for CRC using fecal occult blood testing (FOBT) with subsequent endoscopy for positive FOBT tests [11].

Despite the national guidelines, adherence is rarely observed. As reported in our earlier work, physicians from Komfo Anokye Teaching Hospital (KATH), Ghana's second largest tertiary facility, vary widely in their screening habits and only one of 39 surveyed physicians practiced in concordance with the national guidelines [12]. Perceived barriers to CRC screening at the physician level included inadequate time, training, and a lack of equipment and facilities. Separately, among patients, knowledge of cancer and

✉ A. Lussiez
alussiez@med.umich.edu

Extended author information available on the last page of the article

cancer screening in Ghana is generally low, even for more prevalent cancers such as breast, prostate, and cervical cancers [13–15]. Increasing CRC screening rates will require coordinated efforts between communities and health systems and a better understanding of the existing barriers.

In this context, we designed an exploratory qualitative study using semi-structured interviews to develop a deeper understanding of community- and system-level barriers to CRC screening in Kumasi, Ghana. The study was designed as a follow-up to our previous quantitative study in which we surveyed physicians at KATH regarding their CRC screening practices and perceived barriers to screening [12]. The results of this study will be able to help inform tailored, multi-level interventions aimed at increasing CRC screening rates in Ghana.

Methods

Study design

In order to understand barriers to CRC screening from multiple perspectives, we interviewed both patients and physicians. The interviews sought to obtain a broader understanding of the perceived barriers to CRC screening in Ghana at the community and system levels. Interview guides were loosely based on the seven domains from the Tailored Implementation in Chronic Disease (TICD) framework [16, 17]. Separate interview guides were created for physicians and patients but were largely similar. Both interview guides were shared with team members who were culturally familiar to ensure relevancy among Ghanaian participants [GK, CKD, DD, BKO]. Approval for the study was obtained from the Institutional Review Board at KATH as the primary site and additionally at the University of Michigan.

Interview participants

Participants were recruited by convenience sampling in order to not place undue burden on our local physician partners. KATH physician participants were included if they screened patients for CRC as part of their practice. Patient participants were either surgical inpatients or being seen in consultation as outpatients. Demographics outside of gender were not recorded in order to protect participants' privacy and our local partners' concern for potential retribution. For example, physicians at KATH are employed by the Ghanaian government and did not want to risk loss of their job if identified which was a possibility given the limited number of physicians at KATH. In total, 14 physicians and 14 patients completed interviews. Participants did not receive any compensation for their participation.

Data collection

In-person interviews were performed by six resident physicians (EAB, KB, EP, FG, LS, and FY) at KATH between October 2020 and January 2021. Prior to interviewing, interviewers explained the purpose of the study and obtained verbal consent. Interviews lasted 10–15 min and were audio-recorded, transcribed verbatim, and de-identified. Of note, physician interviews were conducted in English and patient interviews were conducted in Twi, the most commonly spoken language in Kumasi. Patient interviews were transcribed from Twi to English. Back-translation was not used due to a limitation of resources.

Data analysis

Transcripts were coded using open coding informed by the iterative steps used in inductive thematic analysis [18]. During the first round of coding, five members of our research team (MB, AV, AL, LJ, and LH) independently reviewed three physician or three patient interview transcripts and annotated them with initial codes. Given the content similarities between the patient and physician interviews, a single codebook was generated using these preliminary codes. Several additional meetings were held to discuss discrepancies, modify the codebook, and adapt code definitions. Once a final codebook was agreed upon, each transcript was then independently coded by one of three members of the research team (AL, LJ, LH). Transcribed interviews were coded in MAXQDA 2020 qualitative analysis software (VEFBI Software, Berlin, Germany).

Results

A total of 28 participants were interviewed in this study: 14 physicians (64% male) and 14 patients (43% male). Previous work has found the majority of physicians at KATH to be male [12]. Barriers were categorized into two groups, community level and system level. At the community level, sociocultural factors, lack of education and financial burden were identified as barriers. At the system level, insufficient access and lack of national prioritization were most commonly reported.

Perceived barriers: community level

Sociocultural

Table 1 describes the range of sociocultural barriers to CRC screening described by patients and physicians.

Table 1 Community-level barriers: sociocultural

Theme	Respondent	Exemplary
Sociocultural		*Health care beliefs*
	Patient 14	"There are some people who have made up their minds. They don't believe in the existence of many things in the world unless it affects them directly. Even if they heard the announcement and are educated on it, still would not be enough to convince them."
	Patient 10	"Some people haven't made up their mind to go get tested, like someone at 50 years. They don't even have that in mind of going to check for cancer or do the fecal occult blood test. So they might not go."
	Physician 01	"In my community there isn't a, um, they aren't used to the idea of frequent screening and check-ups. Hospitals are usually seen as a last resort, after options have failed to provide."
		Stigma
	Patient 01	"Oh, I don't think they will [look down upon you]. Since it is not like HIV or let us say COVID-19 that will stigmatize you."
	Patient 10	"I have not seen someone say they won't get close to someone with cancer."
	Physician 09	"Well, um, cancer in itself is terrible. It's terrible from the onset, from when you are told, you know. The stigma and also the unavailability of a lot of cancer facilities, oncology facilities and clinics, so yeah, it's a terrible thing to be diagnosed of it and to even be aware or have the knowledge that you have it, yes."
		Perception of FOBT
	Patient 13	"As human as we are who can say they do not defecate. So why will you laugh at me for taking a stool sample for a test? If they decide to laugh it is their own problem. This is not the only illness that requires a sample of your stool. If your stomach aches and go to the hospital, the doctor can request you go to the lab for your stool to be examined. So, I do not think you they will be laughed at. Even if they do, I do not care."
	Patient 14	"I can attest to the fact that nothing like this will ever happen. No one will be teased. For instance, if you are unwell and you go to the hospital and the doctor asks you to bring your stool and urine for testing to determine the illness, the person will run to go and bring it to the doctor. "
	Physician 05	"Generally in the traditional setting, people see fecal matter as some sort of an abomination and I mean, they may not be comfortable having other people looking at their stool. So sometimes they need a certain level of encouragement before they are able to provide stool samples for you."
		Role of superstition, religion and traditional medicine
	Patient 13	"Taking a sample of your stool is not a big deal, but the problem is, in a community you have superstitious people. I think with a little training we can create awareness for them to understand the importance of the test."
	Physician 11	"Okay, in our region or area we find ourselves, I mean people most of the time perceive cancer as a strange illness which may be as a result of a religious or belief, they attend to it at home or in churches but not in the hospitals."
	Physician 05	"In the village so they start the herbs before the operations are planned, various concoctions and leaves, drinking stuff here and there. So we didn't even know about it until it was almost too late when he [patient] had lost so much weight before it got too low and started seeking professional medical care….sometimes, some of these religious bodies or persons sort of hinder the progress of medicine. And also with the traditional medicine people too, preaching false cures to people, grinding all sorts of leaves and herbs for people, they are sort of compounding the problem."
		Willingness to undergo screening
	Patient 12	"God has given you people [doctors] the knowledge, so I will do as you say and follow any direction I'm given."
	Patient 14	"When someone is sick, we can not tell what is wrong till we go to the hospital for lab tests to know what is wrong. This is just a way doctors use to find out what is really wrong with us."
	Patient 03	"It will not bring any issues. If you want to be healthy you have to get tested."

These included health care beliefs, the influence of religion and traditional medicine, perception of stool collection for FOBT, and the stigma associated with the diagnosis of cancer. The idea of physician consultation upon initial symptom presentation and for routine cancer screening was not widely accepted as the norm. Respondents also commented on the prevalence of religion and its role in shaping community members' medical beliefs and habits. Some physicians noted that patients may seek treatment from their church or a spiritualist before coming to see them. One physician explained his frustration with this phenomena:

> In the village…they start the herbs before the operations are planned, various concoctions and leaves, drinking stuff here and there....sometimes, some of these religious bodies or persons sort of hinder the progress of medicine. And also with the traditional medicine people too, preaching false cures to people,

> grinding all sorts of leaves and herbs for people, they are sort of compounding the problem. -Physician 05

This physician explains that while he also believes in God, religion and traditional medicine may "hinder the progress of medicine," and prohibit timely access to care and effective medical treatment.

The stigma of having a diagnosis of cancer was noted a few times but overall, infrequently discussed. One patient mentioned that cancer is not stigmatized, unlike diagnoses of human immunodeficiency virus (HIV) or coronavirus disease 2019 (COVID-19) (Patient 01). More often, patients discussed the collection of fecal matter for FOBT. Patient participants rarely said they would be uncomfortable giving a sample of stool, most instead expressed faith in their physician and willingness to undergo any recommended test in order to facilitate diagnosis and treatment. Moreover, they believed their communities would feel the same way. When asked if people would be laughed at for undergoing FOBT, one patient commented:

> I can attest to the fact that nothing like this will ever happen. No one will be teased. For instance, if you are unwell and you go to the hospital and the doctor asks you to bring your stool and urine for testing to determine the illness, the person will run to go and bring it to the doctor. – Patient 14

Lack of education

Lack of education was one of the most commonly mentioned barriers to CRC from among patients and physicians (Table 2). Participants believed that improved medical education related to CRC and screening awareness would be beneficial for increasing rates of CRC screening in the community. Further, without understanding the importance of CRC screening, patients felt their community would be unlikely to undergo screening.

> If they do not understand what the test is for, they will not see the importance of participating in the screening.—Patient 13

Specifically, patients pointed out that education should not only describe what CRC and CRC screening are but emphasize their importance and how cancer is a "dangerous illness" (Patient 10). Separately, both patient and physician respondents acknowledged the power of community and religious leaders to leverage their platforms to educate community members and promote the importance of CRC screening. One physician highlighted the role clinicians could play to encourage this effort:

> …we all need to play a role. There is a role that we as clinicians for instance…help educate religious leaders use their church platforms and mosque and religious setting to preach and to education the people so that people will come our way. – Physician 03

Here, this physician emphasized the unique role they can play in educating key personnel who have highly influential positions in their communities.

Table 2 Community-level barriers: lack of education and financial

Theme	Respondent	Exemplary
Lack of education	Patient 13	"If they do not understand what the test is for, they will not see the importance of participating in the screening. If they are educated on it, they will surely partake in it."
	Patient 06	"For someone to bring his or her sample stool, the person needs to understand what this is all about before he will come and do it. So, if the briefing is successful, he or she will know the importance of the stool and knows how dangerous the cancer is."
	Physician 03	"There is a role that we as clinicians for instance…help educate religious leaders use their church platforms and mosque and religious setting to preach and to education the people so that people will come our way, politicians providing the necessary resources and funding for its treatment, education and screening."
Financial	Patient 06	"When it comes to the money issues, we would prefer the screening being close to us. Likes the hospitals by us or in schools. This is because, when most of us want to come to the hospitals for check-ups, we always assume they will charge us a whole lot. We cannot afford that, so we will be happy if it is brought to our community and the cost is reduced…sometimes when I visit the hospital, the Health Insurance does not cover all my hospital bills and drugs. Sometimes it's just the hospital card."
	Patient 08	"People are excited of getting tested. The problem is, they cannot afford it. They don't have the money to go to the hospital."
	Physician 11	"The screening process which involves the FBOT and then the colonoscopy as well in our setting in very expensive and so people may not have the ability to afford the kind of screening test….Normally, most of the tests is not in the insurance program so when you write for them and people who normally have the cases are from the rural area so eventually they may not end up going to pay for these tests."

Financial burden

Several patients and physicians reported cost as a barrier to CRC screening (Table 2). Many alluded to a general state of poverty in their community resulting in lack of funds to cover the costs of screening as well how they "don't have the money to go to the hospital" (Patient 08). Additionally, a few patients reported that despite having health insurance, not all of their medical bills were covered.

Perceived barriers: system-level

Access

Although the majority of patients reported having a local hospital where they could seek medical care, they were not always able to receive what they needed (Table 3). Some noted local hospitals did not always have physicians available resulting in exceedingly long wait times for general medical care and at times, resources for diagnosis and treatment were frequently lacking. Separately, physicians noted that FOBT was not always available at every hospital and in particular highlighted the need for easy access at all medical system levels: community, sub-district, and district.

> If these so called fecal blood tests can be made available especially for those of us coming or working in the sub-district. If these test kits are not available and then they always have to come to these CT, or what they are about to get, will be a big problem, they will lose interest in doing it. So I think they, the point should be available right down to the district level and sub-district level, so that it can easily be picked from there.—Physician 03.

This physician notes that if FOBT is not widely accessible, physicians will lose interest in recommending the screening test.

Lack of national prioritization

CRC screening was generally not perceived to be a national priority in Ghana (Table 3). To address this, participants suggested that: (1) the Ministry of Health (MOH) increases pertinent cancer education and public awareness of CRC and (2) FOBT financial coverage is incorporated into the National Health Insurance Scheme (NHIS), Ghana's national insurance policy that was designed to provide basic healthcare services [19]. Although the NHIS was designed to cover over 95% of disease conditions in Ghana, including treatment for breast and cervical cancers, it notably does not over CRC screening or treatment [20]. One physician commented:

> The Ministry of Health needs to really invest a lot of time and create more public awareness of cancers... public education is very necessary. Also…the government and Ministry of Health entirely should also

Table 3 System-level barriers

Theme	Respondent	Exemplary
Access	Patient 06	"I think the reason is they are understaffed, or their schedule is not planned well, especially on weekends no doctor attends to you. Some doctors may tell you they are not in charge of a specific illness, so they cannot help you. They told us they have a special unit, that special unit should at least have one doctor there on weekends in case of an emergency. Whenever I go to the hospital, I am told the doctor in charge of the sickness I am suffering from is not around. So, I am left helpless. They expect to me to go home and die."
	Physician 02	"This fecal occult blood test, you don't see it. I-its-it's not available actually…..Some of them [patients] too you may have to get the test to them at their doorstep."
	Physician 03	"If these so called fecal blood tests can be made available especially for those of us coming or working in the sub-district. If these test kits are not available and then they always have to come to these CT, or what they are about to get, will be a big problem, they will lose interest in doing it. So I think they, the point should be available right down to the district level and sub-district level, so that it can easily be picked from there."
Lack of National Prioritization	Physician 09	"The Ministry of Health needs to really invest a lot of time and create more public awareness of cancers…public education is very necessary. Also…the government and Ministry of Health entirely should also invest in cancer care, invest in providing health facilities resources for the management of these patients, and also if they could factor it in to the national health insurance scheme. "
	Physician 05	"I don't know if it is already on the national health insurance, but I think that one of the easiest things to do is put Fecal Occult Blood on the insurance so if national health insurance covers it, it would be easier to get more people to do it, but sometimes if you realize it's going to add to the patient's bill, it makes it hard to even request something like that."
	Physician 06	"Some of the cancers like breast, some of their chemotherapy drugs are covered by NHIS [National Health Insurance System], but currently I don't know of any NHIS that is covering eh maybe fecal occult blood test…I think we can do more to actually prioritize it as we do compared to breasts and the other cancers."

> invest in cancer care, invest in providing health facilities resources for the management of these patients, and also if they could factor it in to the national health insurance scheme. -Physician 09

This physician believed that given the increasing prevalence of CRC in Ghana, investment from the MOH to "create more public awareness," increase education, and advocate for insurance coverage of FOBT would have significant impact on Ghanaians.

Discussion

The results of this study highlight several barriers to CRC screening in Ghana at both the community and system levels. At the community level, sociocultural factors included reliance on alternative medicine or religion and limited use of hospitals for medical care. Respondents simultaneously noted that lack of education regarding CRC and CRC screening was widespread and without addressing this issue, patients would be unlikely to undergo screening. At the system level, screening was limited by insufficient access to FOBT and a lack of national prioritization. Efforts from the Ministry of Health to promote awareness and education as well as incorporation of FOBT into the National Health Insurance Scheme were cited as opportunities to improve rates of CRC screening. Our results build on our previous work identifying barriers at the physician level including lack of equipment, personnel shortages, and limited training and, within this context, underscore the need for a multipronged approach to improving CRC screening rates in Ghana in order to ultimately reduce the burden of CRC [12].

As our respondents highlighted, improved education, garnering support from the community, and reducing the financial burden of CRC screening will be required to make substantial impact. Mobile health platforms are effective means of communication and education and can help provide timely medical care within the confines of low resource settings [21–23]. As such, mobile health platforms may be an innovative way to address CRC screening and may be particularly effective in Ghana, where WhatsApp accounts for 90% of information flow [24]. Prior studies have shown the success of mobile health platforms in improving the conduction of cervical cancer screening [25]. Our team is currently working on the development and implementation of *ConqueringCRCancer*, a mobile health platform that leverages pre-existing electronic tools such as WhatsApp [26] and Qualtrics [27] and trains community health workers in Ghana to bring and administer FOBT for patients in their homes. Further, use of this tool will facilitate localization of the nearest endoscopy center should more invasive testing be required and will serve as a longitudinal tracking system for CRC screening.

No matter how effective an intervention, sustainable impact will require change at the system level, including improved access and national support. The system-level barriers identified in our study are similar to other work evaluating the barriers to breast and cervical cancer screening and despite increased national attention, screening rates for breast and cervical cancer in Ghana remain low at 12% and 3.4%, respectively [13, 14, 28]. Strategies employed as part of the response to the HIV/AIDS epidemic may be especially helpful in designing efforts aimed at improving screening for all three cancers. Ghana's multi-sector, coordinated approach to fighting the HIV/AIDS epidemic has allowed for the successful implementation of interventions within the decentralized Ghanaian health care system. This has resulted in improved physician awareness, increased testing and treatment access, prevention of mother-to-child transmission, and universal precautions to prevent infection [29, 30]. Such an approach may additionally encourage communication between the government, hospitals, and physicians and ultimately align priorities to more effectively improve CRC screening rates. Another helpful tactic from Ghana's management of HIV/AIDS was early creation of the HIV Sentinel Surveillance (HSS) system, and later the Ghana Demographic and Health Survey, which allowed for estimation of the extent of HIV infection and the linkage of HIV results to key demographic, social, and behavioral factors [31]. These data repositories—which are lacking for CRC—were critical in understanding the burden of HIV/AIDS, tracking progress, and identifying where needs were highest. As a marker of Ghana's success, HIV screening is now widely available at the national, regional, district, and subdistrict levels [30].

Our study must be interpreted in light of its limitations. We used convenience sampling which may limit the generalizability of our results in two ways. First, we sampled from only one institution; however, KATH is the second largest tertiary facility in Ghana and receives referrals from 12 of 16 regions of Ghana [32]. It receives a diverse set of patients representative of almost the whole country. Second, by interviewing individuals who were patients at KATH, our sample may be biased as it is comprised from a population willing to seek care at a hospital. Therefore, these participants may not share the same health beliefs as the Ghanaian population at large. However, several patients acknowledged their community's hesitancy in seeking hospital care; we believe community views were broadly represented. Lastly, our study was conducted during the COVID-19 pandemic which limited our sample size, resources, and ability to train interviewers as intensively as originally planned. Despite these limitations, we found our collected data to be incredibly informative and our local partners perceive it to be in

line with their experiences. Future studies are needed to understand barriers to CRC screening in a broader Ghanaian population and to investigate the most appropriate method for CRC screening in Ghana.

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Data availability The dataset generated during this study are not publicly available but are available from the corresponding author on reasonable request.

Code availability Not applicable.

Declarations

Conflict of interest None.

Ethics approval Not applicable.

Consent to participate All interviewees gave verbal consent prior to participating.

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Authors and Affiliations

A. Lussiez[1,7] · C. K. Dally[2,3] · E. A. Boateng[2] · K. Bosompem[2] · E. Peprah[2] · L. Hayward[4] · L. Janes[4] · M. Byrnes[1] · A. Vitous[1] · A. Duby[1] · C. Varlamos[1] · L. Ma[1] · D. Darkwa[2] · F. Aitpillah[2] · K. C. Gyasi-Sarpong[3] · B. K. Opoku[3,5] · K. Raghavendran[1,6] · G. Kwakye[1,6]

C. K. Dally
dallykc@yahoo.com

E. A. Boateng
eaboateng@hotmail.co.uk

K. Bosompem
kingsleybosompemmd@gmail.com

E. Peprah
ebpeprah@gmail.com

L. Hayward
haywardl@med.umich.edu

L. Janes
linnyj@med.umich.edu

M. Byrnes
mabyrnes@med.umich.edu

A. Vitous
vitousc@med.umich.edu

A. Duby
agay@med.umich.edu

C. Varlamos
cvarlamo@med.umich.edu

L. Ma
lindsma@med.umich.edu

D. Darkwa
stakigh@msn.com

F. Aitpillah
fraitp@yahoo.com

K. C. Gyasi-Sarpong
gaysek@yahoo.com

B. K. Opoku
baafuoropoku@yahoo.com

K. Raghavendran
kraghave@med.umich.edu

[1] Department of Surgery, University of Michigan, 1500 East Medical Center Dr, Ann Arbor, MI 48109, USA

[2] Department of Surgery, Komfo Anokye Teaching Hospital (KATH), Okomfo Anokye Road, Kumasi, Ghana

[3] Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana

[4] University of Michigan Medical School, Ann Arbor, MI, USA

[5] Department of Obstetrics and Gynecology, Komfo Anokye Teaching Hospital (KATH), Kumasi, Ghana

[6] Michigan Center for Global Surgery, University of Michigan, Ann Arbor, MI, USA

[7] University of Michigan, Taubman Center, Floor 2 Reception C, 1500 E Medical Center Dr SPC 5331, Ann Arbor, MI 48109-5331, USA