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Documenting the costs of social behavior change interventions for health in low- and middle-income countries

Avenir Health

TECHNICAL REPORT

Documenting the Costs of Social Behavior Change Interventions for Health in Low- and Middle-income Countries

AUGUST 2021

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Breakthrough RESEARCH catalyzes social and behavior change (SBC) by conducting state-of-the-art research and evaluation and promoting evidence-based solutions to improve health and development programs around the world. Breakthrough RESEARCH is a consortium led by the Population Council in partnership with Avenir Health, ideas42, Institute for Reproductive Health at Georgetown University, Population Reference Bureau, and Tulane University.

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Avenir Health was founded in 2006 as a global health organization that works to enhance social and economic development by providing tools and technical assistance in policy, planning, resource allocation and evaluation. Its focus is on developing and implementing demographic, epidemiological and costing models for long-range planning to assist with setting goals, strategies, and objectives. Avenir Health assists in both developing and implementing programs in HIV/AIDS, reproductive health, maternal health and other programming areas. Avenir Health works with government agencies, foundations, corporations, and nongovernmental organizations around the world.

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Avenir Health

Acronyms

FP/RH	Family planning/reproductive health
IPC	Interpersonal communication
MNCH	Maternal, newborn, and child health
NGO	Nongovernmental organization
SBC	Social and behavior change
UCSR	Unit cost study repository
USAID	United States Agency for International Development
USD	United States dollar

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EXECUTIVE SUMMARY

Understanding the costs associated with social and behavior change (SBC) interventions for health is critical for budgeting, price setting, program planning, and economic analysis. Breakthrough RESEARCH performed a literature review and analysis to identify, classify, and synthesize published costs associated with SBC programming in low- and middle-income countries.

The peer-reviewed SBC cost literature was searched using PubMed in May 2018 and September 2019, with further studies added from the grey literature and secondary sources. The literature was summarized by study design characteristics, and unit costs for SBC interventions were analyzed to derive the mean, median, first and third quartile, and minimum and maximum costs.

We included 147 cost studies with a total of 847 cost observations, of which 355 cost observations were unit costs and 120 of these were comparable enough for synthesis purposes. SBC intervention categories demarcated were: interpersonal communication (31%), mass media (21%); packages delivering more than one SBC intervention category but reported as a combined cost observation (15%); other SBC intervention types (13%); and studies with more than one SBC intervention category with each reported as a distinct cost observation (20%). Median unit costs varied by SBC intervention, driven largely by differences in the unit of analysis. Mass media median unit costs ranged from $0.17 to $0.58 per person exposed and interpersonal communication unit costs were $4.04[a] per person participating in group settings and $8.34 in individual settings.

The findings from this review can assist with SBC cost comparisons, budgeting, and planning, and can increase our understanding of how SBC costs vary among interventions and contexts. While many SBC cost studies were identified, there are still several data gaps that would benefit from new, quality SBC costing research.

[a]All data were converted to 2017 United States Dollars (USD).

BACKGROUND

Understanding the costs associated with health interventions is essential for budgeting, price setting, program planning, and economic evaluation to inform the allocation of scarce resources. There is limited cost data compilation for social and behavior change (SBC) interventions, which aim to improve health-seeking behaviors and important intermediate determinants, including knowledge, attitudes, communication, and social norms.[1] Although SBC interventions are generally recognized as critical to the success of many health programs, the data on SBC costs have not been adequately summarized, nor has SBC been regularly linked through economic evaluation to improved health outcomes, resulting in insufficient appreciation and funding for SBC programs.[2]

To address these deficiencies, the Breakthrough RESEARCH project, funded by the United States Agency for International Development (USAID) developed "The Business Case for Investing in Social and Behavior Change for Family Planning" (Business Case) to examine the costs of SBC programming that promote family planning and corresponding health system savings, and productivity losses averted due to improved health outcomes.[3] This report documents the process of identifying and analyzing published SBC cost data used in this Business Case, and reports the resulting median unit costs, while discussing the gaps in available SBC cost data.

United States government work

METHODS

The three main research steps in this review comprised: (1) searching the literature to identify SBC cost studies, (2) extracting cost data, and (3) synthesizing the data to calculate descriptive statistics. The methodological appendix (Appendices A.1–A.5) provides additional details for each research step.

We conducted an initial PubMed search in May 2018. To identify a set of SBC intervention search terms, we began with USAID's definition of SBC, "activities or interventions that seek to understand and facilitate change in behaviors and the social norms and environmental determinants that drive those behaviors".[1] We consulted programmatic and evaluation frameworks to operationalize the USAID definition and unpack SBC interventions from either clinical or standard of care.[4–8] The resulting intervention search terms were within the identified framework categories of mass media, interpersonal communication (IPC), provider behavior change, SMS/phone reminders, and community sensitization. The final search terms combined these intervention types with different health areas (initially "family planning," broadened to include "reproductive health," "malaria," "HIV," "maternal and child health," and "integrated") and costing terms (see Appendix A.1).

We downloaded each retrieved abstract into an EndNote 8.0 library and assessed for inclusion based on four criteria: (1) described an SBC intervention; (2) indicated the inclusion of cost data; (3) was in English, Spanish, or French; and (4) at the time of the study, was conducted in a World Bank-designated low- or middle-income country. For studies meeting these criteria, we conducted a full-text review and applied additional inclusion criteria: (5) cost estimates were clearly reported in tables or text; (6) empirical cost data were reported or analyzed; and (7) sources of cost data were reported.

For each full-text review, applying a snowball methodology identified any additional references to applicable SBC cost data until unique references were no longer found. Due to the complexity of identifying SBC studies in the literature (discussed further below), we also reviewed secondary sources including the Global Health Cost Consortium Unit Cost Study Repository (UCSR)[9] and SBC effectiveness studies identified as having potentially usable cost data. Using combinations of key terms from the PubMed search and the same inclusion criteria, supplemental searches were conducted in June 2018 using POPLINE, Google Scholar, and the USAID's Social Behavior Change and Development Experience Clearinghouse, Population Services International, Population Council, and FHI 360 web sites. An additional PubMed search in October 2019 focused on identifying malaria SBC cost literature (see Appendix A.1).

A data extraction template, the foundation for the cost data repository, was developed in Microsoft Excel, and was modeled after the UCSR (Appendix A.2). Data from each included study were extracted; note that an individual study typically had multiple cost observations. **Table 1** (next page) details the primary data extraction fields. All data were converted to 2017 United States Dollars (USD), and where not reported in the paper, a unit cost was calculated (Appendix A.3).

For each SBC intervention, we calculated the median, average, range, and first and third quartile unit costs. Unit cost data were included in this synthesis of SBC intervention costs if they used one of the following units of measurement for the SBC intervention:

- Per person exposed—Used for mass media and community sensitization (e.g., loudspeaker announcements), typically represents one-way communication directed at individuals; measures in the cost literature indicating exposure include terms such as "people who listened to," "people who watched," or "people who subscribed to [a newspaper, magazine, etc.]".
- Per person participating—Used for IPC, bundles or "packages"of SBC interventions and SMS/phone reminders, indicates more interactive communication between SBC practitioners and individuals; measures in the cost literature indicating participation include terms like "people who received [counseling, etc.]," "people who visited/were visited by," or "people who took part in…".
- Per provider trained—Used for provider behavior change, indicates training focused on improving provider and client communication; terms for this category include "people who received training" or "people who took part in…".

TABLE 1 DATA EXTRACTION FORM COMPONENTS

INFORMATION TYPE	SPECIFIC FIELDS
Study identification	Study ID, lead author, all authors, year of publication, title, journal, URL
SBC intervention description	Health area, main intervention type, intervention details, data collection years
Means of service delivery; geography	Platform*, ownership†, geographic scope‡, country, region, urban/rural
Population and dissemination	Population served, number targeted, number exposed/participated
Cost type and parameters	Cost category/type, economic/financial costs§, cost perspective¶, unit of measurement, duration of measurement, intervention phase, scale
Cost details	Cost per output/outcome, currency, currency year, currency conversion, cost component amounts (personnel, commodities, recurrent, capital, above-site, and other), cost inputs, client costs, revenues, scale, sensitivity analysis, further cost methodology details, cost calculation explanation, additional notes

*Platform is the channel of service delivery, such as through fixed facilities like clinics or through outreach modalities like mobile vans.

†Ownership refers to the type of organization funding and/or implementing the intervention, whether public/government, private, local nongovernmental organization (NGO), international NGO, or a mix of these.

‡Geographic scope mean whether the intervention was implemented nationally, regionally, or at the local level of a city or group of villages.

§Economic costs reflect the full value of all resources utilized in producing a good or service, inclusive of "opportunity costs" that represent the value of the forgone opportunity to devote unpaid resources (such as volunteer time and donated goods) to another purpose. Financial costs reflect financial outlays for goods and services needed to carry out a public health or medical intervention.

¶The perspective can be provider, societal, or client. The provider perspective includes costs by the service provider to produce the activity, service, or intervention at the point of care, while the societal perspective includes all costs, regardless of payor. The client perspective can include costs not typically included in other perspectives, such as travel expenses and lost wages due to the time spent obtaining care.

Additionally, observations were included that utilized a provider costing perspective, measured costs during the overall project (including design or training) or implementation phase, and had no mathematical inconsistencies in reported data. See Appendix A.4 for more detail. Further exploratory analysis examined a broader set of unit costs that contained some non-SBC costs when fully isolating SBC costs was not possible (Appendix A.5).

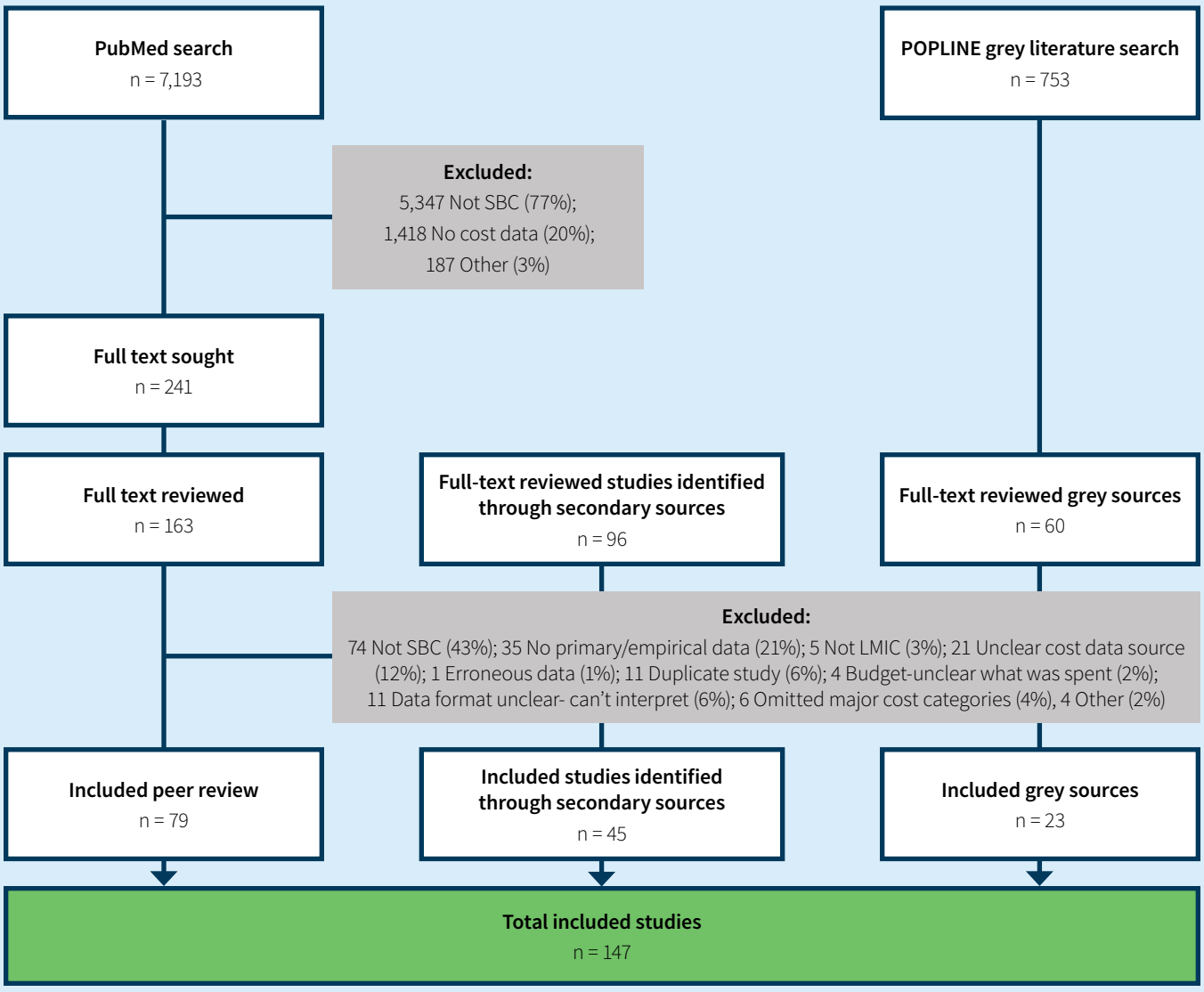
RESULTS

Among the 7,193 abstracts identified in the PubMed searches, the majority (n=5,348) were excluded because they did not describe an SBC intervention (see **Figure 1**). Another 1,418 abstracts were excluded because they did not indicate inclusion of cost data. A further 187 abstracts were excluded for other reasons, such as not conducted in a low- or middle-income country, duplicative of another study, or unavailable in either English, French, or Spanish. Of the remaining 240 abstracts, 183 articles were electronically available for full-text review; after review, 91 studies were retained for full extraction.

An additional 818 articles were identified through a grey literature search (n=753) and citations from secondary sources (n=65, noted above). Of these, 125 articles met the criteria for full-text review; after review, we included 56 studies for full extraction.

In total, data from 147 cost studies were extracted: 91 studies from the PubMed cost literature searches, 32 studies from the secondary sources, and 24 studies from the grey literature search (see Appendix B for further details on included studies).

FIGURE 1 SBC COST LITERATURE SEARCH RESULTS DIAGRAM



Study characteristics

Of the 147 included studies, 22% were published before 2000, 31% were published between 2000 and 2009, and 46% were published from 2010 to the present (see Table 2). In terms of health domain, 35% reported costs for family planning or reproductive health, followed by HIV (25%), malaria (15%), maternal and child health (15%), integrated SBC or more than one health area (8%), and other (2%). Regionally, a majority of studies (56%) were set in Africa, followed by South and Central Asia (20%), the Western Hemisphere (13%), and other regions including Europe and Eurasia, the Middle East and North Africa, East Asia and the Pacific (9%), or studies in more than one region (2%). Over half of the studies focused on either the general population (27%) or women (27%), followed by parents and their children (10%), adolescents and young adults (9%), key populations such as sex workers and men who have sex with men (8%), other populations (8%), men (7%), and studies reporting data for multiple populations (4%). The most common SBC intervention category was IPC (31%), followed by mass media (21%), packages delivering more than one SBC category but reported as a combined cost observation (15%), provider training (8%), SMS/phone calls (4%), and community sensitization (1%), while the remaining studies contained more than one SBC intervention category with each reported as a distinct cost observation (20%).

TABLE 2 STUDY CHARACTERISTICS (N=147)

STUDY CHARACTERISTIC	PERCENT
Date of publication	
Before 2000	22.4
2000–2009	31.3
2010–present	46.3
Health area	
Family planning/reproductive health	35
HIV	25
Malaria	15
Maternal and child health	15
Integrated SBC or more than one health area*	8
Other†	2
Region	
Africa (sub-Sahara)	56
South and Central Asia	20
Western Hemisphere	13
Other‡	9
More than one region	2
Target population	
General	27
Women	27
Parents/children	10
Adolescents and young adults	9
Key populations§	8
Other¶	8
Men	7
Multiple target populations#	4
SBC intervention category	
Interpersonal communication	31
Mass media	21
Packages of SBC interventions	15
Provider training	8
SMS/phone call	4
Community sensitization	1
Multiple intervention categories**	20

*The difference between interventions with SBC integrated across multiple health areas in a coordinated and intentional way (i.e., with integrated design, branding, etc.) and SBC implemented in multiple health areas could not be clearly determined from intervention descriptions.

†Other health areas include established infectious diseases such as river blindness or cholera and chronic diseases such as cancer.

‡Other region categories with cost data are Europe and Eurasia, Middle East and North Africa, and East Asia and the Pacific.

§Key populations with cost data include men who have sex with men, sex workers, people who inject drugs, and orphans and vulnerable children.

¶Other population groups with cost data include people living with HIV, people targeted by the intervention as being influenced by their spouse, and where the population was not specified.

#Study includes distinct cost estimates for more than one target population.

**Study includes distinct cost estimates for more than one intervention category.

Cost estimates

The SBC cost data repository contains 867 cost estimates from all 147 cost studies, where individual studies may contribute separate cost estimates for different countries, intervention types, and types of cost (including total cost, unit cost, and economic evaluation ratios). Total and unit costs are further classified into costs for SBC-exclusive interventions, isolated costs for SBC components of broader interventions, and costs of mixed interventions with some non-SBC costs when full isolation of SBC component costs were not possible (see Appendix A.5). The 120 unit costs in the analysis presented here utilized a standardized unit of measurement appropriate to the intervention type, a provider costing perspective, and an overall project or implementation intervention phase. The observations that did not satisfy the inclusion criteria for this analysis, such as those reporting total costs or economic evaluation ratios, those utilizing units such as per event or message, or those encompassing intervention phases limited to design or training, are available in the SBC cost data repository for further analysis.

As shown in **Table 3**, there is substantial variation in unit costs both between and within SBC intervention types. Some variation between interventions is due to differences in denominators: for example, the denominator for all mass media interventions and for community sensitization is "per person exposed," which is generally greater than interventions where the denominator is either "per person participated" or "per household participated."

There is also substantial variation in unit costs within SBC intervention types. Median and average unit costs frequently differ, with average unit costs consistently exceeding median unit costs due to outliers with particularly high unit costs. This is particularly true for mass media interventions; three mass media interventions—billboards/flyers, newspaper/magazines, and TV—had average unit costs 19 to 24 times more than the median

TABLE 3 MAIN ANALYSIS OF THE MEDIAN FINDINGS

INTERVENTION	UNIT (PER PERSON)	NUMBER OF UNIT COSTS	MEDIAN $	AVERAGE $	MINIMUM–MAXIMUM $	FIRST AND THIRD QUARTILE Q1 | Q3 $
MASS MEDIA						
Radio	Exposed	11	0.26	1.22	0.01 – 5.12	0.13 | 1.29
TV	Exposed	10	0.17	3.28	0.01 – 30.72	0.09 | 0.39
Newspapers/magazine	Exposed	3	0.30	6.98	0.03 – 20.62	0.16 | 10.46
Billboards/flyers	Exposed	5	0.25	5.99	0.08 – 28.50	0.12 | 1.02
Live drama	Exposed	5	0.45	1.43	0.14 – 3.55	0.39 | 2.60
Mixed mass media	Exposed	7	0.58	0.59	0.04 – 1.90	0.17 | 0.65
IPC						
Group IPC	Participated	29	4.40	8.63	0.15 – 64.22	1.69 | 7.43
Individual /household IPC	Participated	16	8.34	32.43	0.33 – 162.35	3.02 | 39.38
PACKAGES OF SBC						
General populations	Participated	4	22.47	23.34	10.23 – 38.18	12.32 | 33.49
Key populations	Participated	3	23.10	70.51	20.90 – 167.53	22.00 | 95.32
OTHER SBC INTERVENTIONS						
Provider training	Participated	12	112.13	397.40	1.16 – 2,467.96	74.66 | 477.18
SMS/phone reminders	Participated	7	1.99	3.02	0.11 – 11.63	1.26 | 2.45
Community sensitization*	Exposed	8	0.98	1.44	0.17 – 3.52	0.29 | 2.37

See Appendix A.5 and for the results when mixed SBC/non-SBC intervention unit costs (excluding medical commodity costs but encompassing service delivery costs that could not be disaggregated such as management, management, support personnel, training, transport, storage, and utilities), are incorporated in the analysis.

*Community sensitization: where the authors labeled the full intervention or intervention component as community mobilization or community sensitization, but the intervention was primarily informing community leaders about the project, making loudspeaker announcements, and other lower-cost activities.

unit costs. For the remaining interventions (including IPC, packages, and others) the average unit cost was between one and five times the median unit cost.

Median unit costs per person exposed to mass media are often obtained through surveys of population data to calculate the percent who recall a campaign or message. Resulting costs vary from $0.17 for television, to $0.25 for billboards and flyers, $0.26 for radio, $0.30 for newspapers and magazines, $0.45 for live drama, and $0.58 for mixed mass media combining multiple components.

IPC unit costs are calculated based on per person participation, typically gauged by project records of individual or household participation, and generally are higher than mass media unit costs. IPC unit costs vary substantially by specific intervention, with a median unit cost of $4.40 per person for group IPC and $8.34 per person for individual IPC. An exploratory analysis found that the median individual IPC unit cost nearly doubles when including a broader set of unit costs that contain observations where the SBC-only costs could not be isolated (see Appendix A.5).

Packages of SBC interventions have higher unit costs than IPC and mass media alone due to their multiple SBC components, which increase costs. In addition, the number of persons (or households) participating can be small in studies where the "participation" captures only those who received the full package. Median unit costs are somewhat comparable by package type segmented by population category, $22.47 for general populations and $23.10 for youth and key populations (e.g., men who have sex with men, sex workers). Average unit costs, however, are nearly triple for packages for key populations relative to the general population ($70.51 versus $23.34).

We also analyzed cost data for three other intervention types. SMS texts and call reminder unit costs are measured as "per person participating," as they are typically aimed at improving adherence and can be interactive. The median unit cost of $1.99 per person participating is higher than mass media interventions (reported as per person exposed) but lower than IPC, since they typically involve a reduced form of participation. The unit cost for community sensitization is evaluated here as per person exposed, with a median unit cost of $0.98. Finally, provider behavior change interventions with a denominator of "per provider trained" have the highest median, third quartile, and maximum unit costs, at $112.13, $477.18, and $2,467.96, respectively, among SBC intervention types.

DISCUSSION

To our knowledge, this is the first comprehensive review and analysis of SBC cost literature. In addition, a complete cost repository workbook containing the data obtained in the literature is now available for download and a subset of the unit cost data have been incorporated into the Global Health Cost Consortium's UCSR. This review resulted in four primary findings on SBC data quantity and quality and overall unit cost findings.

Key findings

First, contrary to prior expectations, there are many SBC costing studies in the literature, with 147 total studies identified. The greatest proportion of SBC costing studies are in HIV and family planning, with considerable gaps in other health areas and some SBC programmatic approaches. Geographically, there is a scarcity of SBC costing literature from Latin America and the Caribbean, Eastern Europe, and the Middle East and North Africa. There is also a comparative lack of studies costing SBC interventions targeting adolescents and young adults, and key populations. Furthermore, there is a significant shortage of cost information on newer and rapidly changing forms of SBC, such as social media and other digital technologies for SBC interventions, and few cost studies on provider SBC interventions.

Where studies do exist, many are outdated, with more than half of the studies published prior to 2010. In addition, substantial changes have occurred in how mass media, IPC, and community engagement interventions are delivered that influence current SBC intervention costs. Donors should consider investing in cost studies in these areas with gaps in SBC cost data.

Second, the unit cost analysis shows that SBC unit costs vary substantially both within and between intervention types. The wide variability in unit costs within interventions is likely partially driven by the heterogeneity of SBC interventions and implementation approaches reported, making it challenging to determine what is representative for each SBC intervention type. Not enough data currently exist to examine which specific intervention characteristics are important cost drivers. As such, this is an area ripe for future work.

To examine the question of specific cost drivers, studies need to very clearly describe their interventions. We found numerous studies of interventions or their components reported as involving "communication," but besides mass media studies, it was unclear whether these elements qualified as SBC. Clearly defining SBC was particularly thought-provoking for provider behavior change, IPC, and information communication technology, given that many health interventions involve provider training, client counseling, or health condition surveillance. For example, cost studies were included in the dataset if they included data for: 1) provider training, skills building or job aids on more efficacious and respectful communication; 2) IPC, counseling surpassing standard counseling practice such as motivational interviewing, group or peer formats, or resource packets focused on behavior change; and 3) information communication technology, technologies that communicate information to people and not passively collecting information about them (e.g., fitness trackers). As SBC practitioners develop comprehensive SBC programs encompassing multiple interventions and delivery methods, it is still important to consider how individual interventions can be classified and defined to better research and understand their effectiveness, including cost-effectiveness.

A third key finding of this review is that SBC cost studies vary substantially in their reporting of SBC interventions, costing methodologies, and cost data, with important implications for comparing results. Unit costs can vary dramatically, depending not only upon where an intervention is implemented and scope of activities or components included, but also by the intensity of service delivery, individuals reached, and intervention phase and time period. Information on these characteristics is often scant or missing in studies, making it difficult to generate comparable unit costs for data analysis. Numerous papers limit descriptions of their studied interventions to one or two words, such as "package" or "community mobilization." Interpreting "packages" of SBC interventions was particularly difficult because the scope could include many possible configurations of mass media, IPC, community mobilization, provider training, as well as other SBC components. Even if an intervention is clearly described, its cost data may reflect only a portion of costs for the described intervention due to time,

funding, or data constraints. For example, we examined two different studies reporting costs for the same SBC intervention in Malawi, but when unit costs were calculated, the results were substantially different because the studies appeared to focus on different time periods and different denominators.[10,11]

Differences in methods used to disaggregate costs can also have important implications. When disaggregating costs for interventions that also include service delivery costs (e.g., family planning services), some studies appear to only attribute costs of communication materials or airtime to SBC and do not include costs such as personnel necessary for delivering SBC. The exploratory analysis in Appendix A.5 examines unit costs when including additional observations that were not exclusively SBC costs. For most interventions, inclusion of "mixed" costs did not substantially alter median unit costs, but it resulted in a 93% increase in unit costs for individual IPC; this makes sense, given the role of personnel costs in delivering individual IPC and the classification of campaigns with door-to-door counseling for individual IPC interventions. A more realistic median cost for IPC likely falls in the middle of the range of the two values $8.34 to $16.13. Use of the newly available SBC Costing Guidelines for reporting SBC cost data collection and results would greatly improve the understanding of SBC cost variability.[12]

Despite the data limitations, our fourth finding is that there are relevant and meaningful cost patterns both between and within SBC interventions consistent with expectations. Mass media interventions should cost less per person, because they reach far more people than other SBC interventions. Further, it is expected that group IPC serving multiple people at each counseling session would cost less than individual IPC. It also makes sense that both forms of IPC would cost less than provider training, where participants can be few, learning requires extensive amounts of time, and travel and food costs are often paid by the intervention implementer.

An important question is the extent to which higher unit costs are associated with higher impacts. We explored impact by different SBC interventions in the Business Case for family planning, finding varying efficacy, and that the most effective intervention depends on the specific barrier to improved health behaviors being addressed.[3] Some behaviors, such as those believed to involve a degree of social or physical risk, can require more intensive interventions to generate change, and as such the SBC interventions are costlier. Voluntary medical male circumcision, for example, can best benefit from a combined effort of mass media, IPC, and provider behavior change to achieve significant impact.[13]

Limitations

There were several notable limitations to our methodological approach, although care was taken to strengthen the validity of the results. This was not a systematic literature review with a submitted study protocol, double data extraction, and an external panel to formally review and revise results. However, we did conduct an extensive internal review, where both cost and effectiveness results from the Business Case were presented to SBC and costing leaders in addition to Breakthrough RESEARCH and ACTION team members. A second limitation is that there could be cases of incorrect classification since defining SBC interventions presents a much greater challenge than for many service delivery-focused interventions whose scope and breadth are more clearly circumscribed. Nonetheless, we did use an iterative process of consulting SBC frameworks and technical experts, internally debating, and comprehensively reviewing all study details to classify reported interventions. Third, while there are wide ranges in unit costs within intervention types, and significant outliers, we standardized as much as possible during extraction, paying particular attention to cost type and unit of measurement, adjusting all costs to a common currency and year, and constraining analysis of unit costs to those with a common set of characteristics.

CONCLUSIONS

Despite these limitations, this review and resultant SBC cost repository can increase our understanding of existing data gaps and how SBC costs vary between and within interventions and contexts. Donors may consider investing in high quality SBC costing studies that address identified data gaps and emerging SBC approaches. In conjunction with the SBC Costing Guidelines, such investments could significantly improve the breadth and standardization of SBC costs. It is also recommended that government ministries, program implementers, and technical specialists not only examine the median unit costs in this review, but also use the detailed repository to identify individual cost estimates that could provide more country- or program-specific comparators for standards, budgeting, and planning. While the prioritization of SBC interventions for implementation will need to consider many factors beyond unit costs, including intervention effectiveness, context, and suitability for national and program priorities, understanding the variations in SBC costs and their dynamics with associated health service delivery costs will be critical as we strive to achieve maximum impact from scarce resources.

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APPENDIX A: ADDITIONAL METHODOLOGICAL DETAILS

A.1 Search terms

Although the focus of the Business Cas was on family planning, to capture potentially related and applicable costing studies of SBC interventions, the search was broadened to search terms for "reproductive health," "malaria," "HIV," "maternal and child health," and "integrated" health areas. The costing search terms were designed to target studies reporting primary cost data, and through testing we found the addition of costing search terms formatted as a monetary symbol to be most efficacious. No date restrictions were specified in order to capture as many cost studies as available.

The original search terms for the SBC cost repository on 7/9/18:

((((Cost[Title/Abstract] OR Price[Title/Abstract] OR "Health economic" [Title/Abstract] OR Dollar[Title/Abstract] OR USD[Title/Abstract] OR $[Title/Abstract] OR €[Title/Abstract] OR £[Title/Abstract])) AND (SBC[Title/Abstract] OR IPC[Title/Abstract] OR "Interpersonal counseling" [Title/Abstract] OR "Intrapersonal counseling" [Title/Abstract] OR "Face-to-face" [Title/Abstract] OR "Social marketing" [Title/Abstract] OR "Social mobilization" [Title/Abstract] OR "Social change" [Title/Abstract] OR "Socio-behavioral" [Title/Abstract] OR Socio-behavioural[Title/Abstract] OR "Change behavior" [Title/Abstract] OR "Change behaviour" [Title/ Abstract] OR "Planned behavior" [Title/Abstract] OR "Planned behaviour" [Title/Abstract] OR "Behavior change" [Title/Abstract] OR "Behaviour change" [Title/ Abstract] OR "Behavioral change" [Title/Abstract] OR "Behavioural change" [Title/Abstract] OR "Behavioral economic" [Title/Abstract] OR "Behavioural economic" [Title/Abstract] OR Attitude[Title/Abstract] OR Norm[Title/ Abstract] OR Tradition[Title/Abstract] OR Traditional[Title/Abstract] OR "Demand creation" [Title/Abstract] OR "Demand generation" [Title/Abstract] OR "Demand generating" [Title/Abstract] OR "Generate demand" [Title/ Abstract] OR "Demand-side" [Title/Abstract] OR "Demand side" [Title/Abstract] OR mHealth[Title/Abstract] OR "M-health" [Title/Abstract] OR Adhere[Title/Abstract] OR Communication[Title/Abstract] OR Advocacy[Title/ Abstract] OR Outreach[Title/Abstract] OR Mobile[Title/ Abstract] OR Campaign[Title/Abstract] OR Media[Title/ Abstract] OR Advertise[Title/Abstract] OR Advertisement[Title/Abstract] OR Entertain[Title/Abstract] OR Edutainment[Title/Abstract] OR Drama[Title/Abstract] OR SMS[Title/Abstract] OR "Text message" [Title/Abstract] OR Phone[Title/Abstract] OR Peer[Title/Abstract] OR "Behavioral design" [Title/Abstract] OR "Behavioural design" [Title/Abstract] OR "Design behave" [Title/ Abstract] OR "Human-centered design" [Title/Abstract] OR "Human centered design" [Title/Abstract] OR Radio[Title/Abstract] OR Television[Title/Abstract] OR TV[Title/Abstract])) AND ("Family planning" [Title/Abstract] OR Reproductive[Title/Abstract] OR Mother[Title/Abstract] OR Father[Title/Abstract] OR Couple[Title/Abstract] OR Pregnancy[Title/Abstract] OR Pregnancies[Title/Abstract] OR Pregnant[Title/Abstract] OR Birth[Title/Abstract] OR Contraception[Title/Abstract] OR Contraceptives[Title/Abstract] OR HIV[Title/Abstract] OR AIDS[Title/Abstract] OR "Harm Reduction" [Title/Abstract] OR Integrated[Title/Abstract] OR Integration[Title/Abstract] OR "Sector wide" [Title/Abstract] OR "Sector-wide" [Title/Abstract] OR "Health System" [Title/Abstract] OR Malaria[Title/ Abstract] OR Zika[Title/Abstract] OR Youth[Title/Abstract] OR Adolescent[Title/Abstract] OR "Newly married" [Title/ Abstract]))

The search terms for the supplemental malaria costing search on 10/3/19:

((((Cost[Title/Abstract] OR Price[Title/Abstract] OR "Health economic" [Title/Abstract] OR Dollar[Title/Abstract] OR USD[Title/Abstract] OR $[Title/Abstract] OR €[Title/Abstract] OR £[Title/Abstract])) AND (SBC[Title] OR IPC[Title] OR "Interpersonal counseling" [Title] OR "Intrapersonal counseling" [Title] OR "Face-to-face" [Title] OR "Social marketing" [Title] OR "Social mobilization" [Title] OR "Social change" [Title] OR "Socio-behavioral" [Title] OR Socio-behavioural[Title] OR "Change behavior" [Title] OR "Change behaviour" [Title] OR "Planned behavior" [Title] OR "Planned behaviour" [Title] OR "Behavior change" [Title] OR

"Behaviour change" [Title] OR "Behavioral change" [Title] OR "Behavioural change" [Title] OR "Behavioral economic" [Title] OR "Behavioural economic" [Title] OR Attitude[Title] OR Norm[Title] OR Tradition[Title] OR Traditional[Title] OR "Demand creation" [Title] OR "Demand generation" [Title] OR "Demand generating" [Title] OR "Generate demand" [Title] OR "Demand-side" [Title] OR "Demand side" [Title] OR mHealth[Title] OR "M-health" [Title] OR Adhere[Title] OR Communication[Title] OR Advocacy[Title] OR Outreach[Title] OR Mobile[Title] OR Campaign[Title] OR Media[Title] OR Advertise[Title] OR Advertisement[Title] OR Entertain[Title] OR Edutainment[Title] OR Drama[Title] OR Digital[Title] OR SMS[Title] OR "Text message" [Title] OR "Text-message" [Title"OR Phone[Title] OR Peer[Title] OR "Behavioral design" [Title] OR "Behavioural design" [Title] OR "Design behave" [Title] OR "Human-centered design" [Title] OR "Human centered design" [Title] OR Radio[Title] OR Television[Title] OR TV[Title])) AND (Malaria[Title] OR Provider[Title] OR PBC[Title] OR "IRS" [Title] OR Spray[Title] OR "ITN" [Title] OR LLIN[Title] OR "Net" [Title] OR "ACT" [Title] OR Artemisinin[Title] OR "Seasonal malaria chemoprevention" [Title] OR "Seasonal malaria chemoprophylaxis" [Title] OR "SMC" [Title] OR "IPTp" [Title] OR "IPTp-SP" [Title] OR "IPTi" [Title] OR "IPTc" [Title] OR Intermittent[Title] OR Fever[Title] OR Microscopy[Title] OR "Rapid diagnostic test" [Title]))

A.2. Development of data extraction template and data extraction

Data from each included study were captured using a study extraction template in Microsoft Excel, which we adapted from the GHCC UCSR extraction template.[b] To align the extraction template structure and terminology with global costing standards and to improve applicability for the intended audiences, we consulted costing, family planning, malaria, and SBC experts and reviewed various costing guidelines.[c]

Where possible, we utilized drop-down lists for extraction fields to standardize the extraction process and facilitate comparison of SBC, HIV, and TB cost data in the UCSR. We listed cost estimates for client costs and revenue in the row for the reported provider cost that they were associated with, unless client costs or revenue were the only cost estimates reported in the study and required a unique row. Reported costs were listed as economic in the data extraction if we could determine from the text the full value of resources utilized to implement and/or access the interventiond. The development of the extraction template was an iterative process. We progressively tailored it to better capture distinctive characteristics of SBC, the units of analysis, cost types, and intervention phase.

Cost data extraction occurred in two waves between June 2018 to February 2020. Quality assurance was performed by the study manager through review of the cost data extraction and calculations, discussion of data extractor questions to confirm alignment of interpretation, and cleaning of key columns of the cost data.

A.3. Calculations for unit costs and preparation of data for analysis

After extracting the data fields (listed in Table 1), the following steps were taken:

1. Divided the author-provided total cost (numerator) by the quantity of units measured (denominator) to create a unit cost.
2. Multiplied the number of people targeted by the percentage exposed/participated to get a number exposed/participated that could be used as a denominator for calculating a unit cost.
3. When the time period of the costs was not given, we generated a time period from the dates reported for the beginning and end of the intervention.
4. Standardized all costs to 2017 USD by first converting local currency to USD for the reported (or estimated)

[b] https://ghcosting.org/pages/data/ucsr/app.

[c] Homan, R. 2016. "Costing of social norm interventions: a primer from the passages project." Washington, D.C.: Institute for Reproductive Health, Georgetown University for the U.S. Agency for International Development (USAID). Retrieved from http://irh.org/wpcontent/uploads/2016/10/Costing_Social_Norm_Interventions_ Passages.pdf (accessed April 30, 2018).; DeCormier Plosky, W., K. Kripke, L. A. Bollinger, & S. Forsythe. 2018. "PrEP costing guidelines." Durham, NC: Avenir Health, for the Optimizing Prevention Technology Introduction on Schedule (OPTIONS) Consortium. Retrieved from https://www.prepwatch.org/wp-content/uploads/2019/01/OPTIONS_PrEP_Cost_Guidelines_Dec2018.pdf.

[d] Economic costs reflect the full value of all resources utilized in producing a good or service, inclusive of "opportunity costs"that represent the value of the forgone opportunity to devote "unpaid"resources (such as volunteer time and donated goods) to another purpose. Financial costs reflect financial outlays for goods and services needed to carry out a public health or medical intervention (in the context of global health), and as such are similar to expenditures. However, in contrast to expenditure data, financial costs depreciate capital expenditures over time.

year of cost data using market exchange rates, then inflating using the U.S. GDP price deflator.

5. Where SBC component costs were not disaggregated, subtracted the medical or lab commodities costs from the cost of "mixed"interventions providing SBC and service delivery to calculate a cost for "running"of the mixed intervention and the SBC component.
6. Divided the costs reported as per couple by two- to obtain a per person cost.
7. Averaged costs (and denominators) reported in the same study for multiple sites or multiple years that had the same country, service delivery platform, target population, ownership, urbanicity, and intervention phase to avoid over-representation of data from single studies.
8. In cases where the study author did not give a year for the reported cost data, we used a formula that took the publication date and subtracted one year to create an estimated year of the cost data (that could be used for inflation purposes).
9. Quality assurance was performed by the study manager through review of the cost data extraction and calculations, discussion of data extractor questions to confirm alignment of interpretation, and cleaning of key columns of the cost data.

A.4. Analysis of unit costs

Once the full cost dataset was extracted, standardized, and cleaned, analysis was conducted to summarize unit cost findings for a sub-set of results. To be included in the analysis, the unit costs in the repository were filtered to allow only for inclusion of those unit costs with the following criteria:

1. The cost type was listed as a unit cost for an SBC intervention or an SBC component (excludes total cost and cost-effectiveness estimates and excludes non-SBC intervention cost estimates and mixed intervention cost estimates).
2. Costing was done from a provider costing perspective (excludes client perspective as defined by the SBC Costing Guidelines and the perspectives designated for the extraction template, given data limitations, of provider including revenues, above-site only, and society—see Table 2)).
3. The unit cost was from the intervention phase of implementation or overall implementation (excludes design, training, start-up, or scale-up only phases).
4. Included a unit of measurement of cost per person exposed or cost per person participated appropriate to the intervention type.
5. The cost estimate was relevant to the SBC interventions listed in Tables 3 and A.5.1. We did not include extracted unit costs for social marketing in the analysis due to challenges in isolating provider costs, since factors affecting the reported cost estimates (e.g., subsidies, revenues) often could not be disaggregated.
6. The study data did not suffer from methodological issues incompatible with aggregated analysis (e.g., medical commodities costs could not be separated from the SBC costs, or the unit of measurement was not clear).

Further, costs were coded as economic or financial. Unit costs included in the analysis were not limited to one or the other category. Where both had been extracted from a study, economic unit costs were used to avoid underestimation of the cost.

For each SBC intervention, we calculated the median, average, range, and first and third quintile costs.

A.5. Exploratory analysis including "mixed" unit cost estimates

An exploratory analysis was conducted to include mixed unit cost estimates. "Mixed costs"consisted of SBC costs where the commodities had been removed; however, other costs that are not strictly SBC were able to be disaggregated from the unit cost (e.g., management, support personnel, training, transport, storage, utilities). Of all SBC intervention types analyzed, unit costs for individual IPC are the most changed by the inclusion of the mixed costs, resulting in a median unit cost of $16.13. This is a 93% rise in cost from the main analysis, as compared to little or no change in median unit cost for the other intervention types. A majority of the included mixed intervention unit costs for IPC are for malaria interventions, which provided door-to-door counseling, hang-up activities, and insecticide-treated nets (ITNs). Although the cost of the ITNs was removed from cost estimates for malaria interventions with a mixed cost

type, transport and storage could not be removed, and these costs are usually high given the weight and size of ITNs.

Limiting the unit cost analysis to cost types that are SBC-only may underestimate the cost, as some unit costs for SBC components do not seem to encompass costs to deliver the SBC component beyond actual communication materials or airtime. Including mixed unit costs in the exploratory analysis does encompass those service delivery costs but would likely result in an overestimate. As such, the median costs in Table 3 and Table A.5.1 represent a range for consideration when using cost estimates.

TABLE A.5.1 EXPLORATORY ANALYSIS OF THE MEDIAN FINDINGS, INCLUSIVE OF THE MIXED INTERVENTION UNIT COSTS WHERE MEDICAL COMMODITY COSTS COULD BE SUBTRACTED

INTERVENTION	UNIT (PER PERSON)	NUMBER OF UNIT COSTS	MEDIAN $	AVERAGE $	MINIMUM–MAXIMUM $	FIRST AND THIRD QUARTILE Q1 | Q3 $
MASS MEDIA						
Radio	Exposed	11	0.26	1.22	0.01 – 5.12	0.13 | 1.29
TV	Exposed	10	0.17	3.28	0.01 – 30.72	0.09 | 0.39
Newspapers/magazine	Exposed	3	0.30	6.98	0.03 – 20.62	0.16 | 10.46
Billboards/flyers	Exposed	5	0.25	5.99	0.08 – 28.50	0.12 | 1.02
Live drama	Exposed	5	0.45	1.43	0.14 – 3.55	0.39 | 2.60
Mixed mass media	Exposed	7	0.58	0.59	0.04 – 1.90	0.17 | 0.65
IPC						
Group IPC	Participated	34	5.56	14.53	0.15 – 210.74	2.06 | 13.08
Individual /household IPC	Participated	31	16.13	41.35	0.33 – 315.58	2.82 | 44.65
PACKAGES OF SBC						
General populations	Participated	5	21.63	23.00	10.23 – 38.18	13.02 | 31.93
Key populations	Participated	5	23.10	53.01	11.16 – 167.53	20.90 | 42.37
OTHER SBC INTERVENTIONS						
Provider training	Participated	13	118.18	417.71	1.16 – 2,467.96	95.50 | 497.72
SMS/phone reminders	Participated	7	1.99	3.02	0.11 – 11.63	1.26 | 2.45
Community sensitization*	Exposed	10	0.84	1.30	0.17 – 3.52	0.35 | 1.87

Italics indicate that, for the intervention type, the median unit costs changed under sensitivity analysis.

*Community sensitization: where the authors labeled the full intervention or intervention component as community mobilization or community sensitization, but the intervention was primarily either informing community leaders about the project, making loudspeaker announcements, or other relatively low-cost activities. Please note, we considered "community mobilization"to involve more active community participation than community sensitization, but also realized that we could not separate it from packages.

APPENDIX B: COST STUDIES

LEAD AUTHOR (YEAR)	COUNTRIES	HEALTH AREAS	SBC INTERVENTION
1. Agarwal, S. (2016)	Tanzania	Integrated	Provider training
2. Alfonso, Y. (2016)	Uganda	HIV	Mixed mass media
3. Arantxa Colchero, M. (2016)	Mexico	HIV	Packages (key population)
4. Arizpe de la Vega, G. (1990)	Mexico	FP/RH (family planning/ reproductive health)	Radio, Individual/household IPC, Packages
5. Askew, I. (2004)	Kenya	FP/RH	Provider training, Group IPC
6. Austrian, K. (2016)	Zambia	FP/RH	Group IPC
7. Babalola, S. (2001)	Cameroon	FP/RH	Mixed mass media
8. Bailey, J. (1973)	Colombia	FP/RH	Mixed mass media
9. Bailey, J. (1975)	Colombia	FP/RH	Social marketing
10. Bango, F. (2016)	South Africa	HIV	Group IPC
11. Baqui (2014)	Bangladesh	FP/RH	Packages (general population)
12.Barberis, M. (1997)	Bangladesh, Columbia, Democratic Republic of the Congo (DRC), Egypt, Ghana, India, Indonesia, Mexico, Morocco, Nigeria, Zimbabwe	FP/RH	Social marketing
13. Barger, D. (2017)	Bolivia	MNCH (maternal, new-born, and child health)	Individual/household IPC
14. Bertera, R. L. (1979)	Turkey	FP/RH	Individual/household IPC
15. Bertrand, J. (1986)	DRC	FP/RH	Individual/household IPC
16. Bertrand, J. (1987)	Guatemala	FP/RH	Radio, Packages (general population), Group IPC
17. Bindoria, S. (2014)	India	HIV	Provider training
18. Black, T. (1976)	Kenya	FP/RH	Social marketing
19. Bonner, K. (2011)	Tanzania	Malaria	Packages (general population), Mixed mass media, Individual/household IPC
20. Boone, P. (2017)	India	MNCH	Individual/household IPC, Group IPC
21. Borghi, J. (2005)	Nepal	MNCH	Group IPC
22. Bowen, H. (2013)	Cameroon	Malaria	Mixed mass media
23. Bradbury, K. (2005)	Mozambique	Integrated	Packages (general population)
24. Burke, H. (2012)	Zambia	HIV	Group IPC, Provider training
25. Chandrashekar, S. (2014)	India	HIV	Packages (key population)
26. Chang, L. (2013)	Uganda	HIV	Group IPC, SMS/phone call, Provider training
27. Chang, W. (2016)	Kenya, Uganda	HIV	Packages (general population), Individual/household IPC
28. Chee, G. (2006)	Madagascar, Ghana, Zambia	MNCH	Packages (general population), Individual/household IPC
29. Chin-Quee (2013)	Zambia	FP/RH	Provider training
30. Chola, L. (2011)	Uganda	MNCH	Individual/household IPC
31. Cohen, J (2018)	Uganda	Malaria	Social marketing
32. Dandona, L. (2008)	India	HIV	Packages (general population), Packages (key population)
33. Das, A. (2014)	India	Malaria	Community sensitization

LEAD AUTHOR (YEAR)	COUNTRIES	HEALTH AREAS	SBC INTERVENTION
34. Davies, J. (1977)	Sri Lanka	FP/RH	Mixed mass media
35. Davis, T. (2013)	Mozambique	MNCH	Group IPC
36. De Allegri, M. (2010)	Burkina Faso	Malaria	Packages (general population)
37. Denison, J. A. (2011)	Zambia	HIV	Group IPC
38. Desrochers, R. E. (2014)	Togo	Malaria	Individual/household IPC
39. Di Giorgio (2018)	Senegal, Uganda	FP/RH	Individual/household IPC
40. Dulli (2016)	Rwanda	FP/RH	Packages (general population)
41. Duncan, W. (1990)	Grenada	FP/RH	Individual/household IPC
42. Ensor, T. (2014)	Zambia	MNCH	Group IPC
43. Fiedler, J. (2008)	Honduras	MNCH	Individual/household IPC
44. Fisek, N. H. (1978)	Turkey	FP/RH	Individual/household IPC
45. Foreit, K. G. (1989)	Brazil	FP/RH	Newspaper/magazine
46. Fung, I. (2007)	India	HIV	Individual/household IPC
47. George, G. (2017)	South Africa	HIV	Packages (key population)
48. Givaudan, M. (1998)	Mexico	FP/RH	Billboards/flyers, Radio, Newspaper/magazine
49. Goodman, D. (2017)	Ghana	MNCH	Provider training
50. Grabowski, M. (2005)	Ghana	Integrated	Individual/household IPC, Packages (general population)
51. Greco, G. (2017)	Malawi	MNCH	Individual/household IPC
52. Guinness, L. (2010)	Bangladesh	HIV	Individual/household IPC
53. Hacking, D. (2016)	South Africa	Integrated	SMS/phone call
54. Hanson, K. (2003)	Tanzania	Malaria	Social marketing
55. Harling, G. (2007)	South Africa	HIV	Individual/household IPC
56. Harrison, A. (2000)	South Africa	FP/RH	Provider training
57. Hearst, N. (1999)	Brazil	HIV	Individual/household IPC
58. Hess, R. (2009)	India	FP/RH	Packages (general population)
59. Homan, R. (2007)	Uganda	FP/RH	Newspaper/magazine, Radio, Group IPC, Individual/household IPC
60. Hsu, J. (2013)	Benin	HIV	Social marketing, Live drama, Individual/household IPC, Radio, Newspaper/magazine, Billboards/flyers
61. Huber, S. C. (1989)	Bangladesh, Colombia, Egypt, El Salvador, Guatemala, Kenya, Mexico, Nigeria, Sri Lanka, Thailand	FP/RH	Social marketing
62. Huffman, S. (1991)	Honduras	MNCH	Provider training
63. Hutchinson, P. (2006)	Bangladesh	MNCH	Mixed mass media, Billboards/flyers, Radio, TV, Newspaper/magazine
64. Hutchinson, P. (2009)	Kenya, Tanzania	HIV	Individual/household IPC
65. Hutton, G. (2006)	Tanzania	Integrated, Malaria	Packages (general population)
66. Jah, F. (2018)	Burundi, DRC, Rwanda	Integrated	Radio
67. Janowitz, B. (1992)	Honduras	FP/RH	Social marketing
68. Janowitz, B. (1997)	Bangladesh	FP/RH	Individual/household IPC and counselling
69. Janowitz, B. (2000)	Tanzania	FP/RH	Provider training, Individual/household IPC
70. JHU/PCS (1988)	Nepal	FP/RH	Provider training
71. JHU/PCS (1992)	Philippines	FP/RH	Mixed mass media

LEAD AUTHOR (YEAR)	COUNTRIES	HEALTH AREAS	SBC INTERVENTION
72. Kabami, J. (2017)	Uganda	Integrated	Packages (general population)
73. Kahn, J. (2011)	Kenya	Integrated	Packages (general population), Community sensitization
74. Kaufman, Z. (2016)	Zimbabwe	HIV	Group IPC
75. Kempers, J. (2014)	Moldova	HIV	Group IPC
76. Khan, M. E. (2008)	India	FP/RH	Provider training
77. Kilian, A. (2015)	Uganda	Malaria	Individual/household IPC
78. Kilian, A. (2017)	South Sudan	Malaria	Social marketing
79. Kincaid, L. (1996)	Brazil	FP/RH	Mixed mass media, TV, Radio, Billboards/flyers, Newspaper/magazine
80. Kincaid, L. (2006)	Philippines	FP/RH	Radio, TV
81. Kipp, W. (1998)	Uganda	Other	Community sensitization*
82. Kolaczinski, J. H. (2010)	Uganda	Malaria	Packages (general population)
83. Larson, B. (2015)	Uganda	HIV	Packages (general population), Individual/household IPC, Community sensitization
84. Lewycka, S. (2013)	Malawi	MNCH	Group IPC
85. Maccario, R. (2017)	Mali	Malaria	Packages (general population), Group IPC, Live drama
86. Mangone, E. (2016)	Tanzania	FP/RH	SMS/phone call
87. Manzi, F. (2008)	Tanzania	Malaria	Packages (general population), Provider training
88. Marseille, E. A. (2011)	Ethiopia	HIV	Individual/household IPC
89. Masaki, E. (2007)	China	HIV	Individual/household IPC
90. Mbonye, F. (2008)	Uganda	Malaria	Individual/household IPC
91. Newlands, D. (2008)	Burkina Faso	MNCH	Packages (general population)
92. Njau, J. (2008)	Tanzania	Malaria	Packages (general population)
93. Ntuku, H. M. (2017)	DRC	Malaria	Individual/household IPC
94. Osei (2008)	Ghana	FP/RH	Provider training, Packages (general population)
95. Palmer, A. (2002)	Kenya	FP/RH	Radio
96. Pande, R. (2006)	India	FP/RH	Packages (key population), Group IPC, Provider training
97. Pant, C. R. (1996)	Nepal	MNCH	Individual/household IPC
98. Patel, A. (2017)	Kenya	HIV	SMS/phone call
99. Perry, H. (2014)	Kenya, Malawi, Mozambique, Rwanda	MNCH	Group IPC
100. Piotrow, P. T. (1990)	Nigeria	FP/RH	Mixed mass media, TV
101. Piotrow, P. T. (1992)	Zimbabwe	FP/RH	Radio
102. Population Center Foundation (1981)	Philippines	FP/RH	Packages (general population)
103. Population Council (2001)	Honduras	FP/RH	Individual/household IPC
104. Powell-Jackson, T. (2018)	India	MNCH	Individual/household IPC
105. Prust, M. L. (2017)	Malawi	HIV	Group IPC
106. Rana, T. G. (2007)	Nepal	MNCH	Mixed mass media
107. Renggli, S. (2013)	Tanzania	Malaria	Packages (general population), Individual/household IPC, Mixed mass media

LEAD AUTHOR (YEAR)	COUNTRIES	HEALTH AREAS	SBC INTERVENTION
108. Reynolds, H. W. (2008)	Kenya	FP/RH	Provider training
109. Robinson, W. C. (2003)	Egypt	FP/RH	TV
110. Rodrigues, R. (2014)	India	HIV	SMS/phone call
111. Rosen, S. (2010)	South Africa	HIV	Individual/household IPC
112. Routh, S. (2000)	Bangladesh	FP/RH	Individual/household IPC
113. Santoso, B. (1996)	Indonesia	MNCH	Provider training
114. Sarker, B. (2013)	Bangladesh	MNCH	Individual/household IPC, Group IPC, Mixed mass media, Live drama, TV, Billboard/flyers
115. Schellstede, W. (1984)	Bangladesh	FP/RH	Social marketing
116. Shen, J. (2018)	Kenya	FP/RH	Packages (general population), Community sensitization
117. Shretta, R. (2017)	Sri Lanka	Malaria	Packages (general population)
118. Simmons, G. B. (1991)	Bangladesh	Integrated	Individual/household IPC
119. Smith Paintain, L. (2014)	Ghana	Malaria	Packages (general population)
120. Sodani, P. (2012)	India	MNCH	Packages (general population), Community sensitization
121. Somda, Z. (2013)	Namibia	HIV	Individual/household IPC, Packages (general population), Mixed mass media
122. Sood, S. (2006)	India	HIV	TV
123. Stella-Talisuna, A. (2014)	Uganda	HIV	Individual/household IPC
124. Stevens, W. (2005)	Malawi	Malaria	Social marketing
125. Svenson, G. (2005)	Dominican Republic	FP/RH	Group IPC, Individual/household IPC
126. Sweat, M. (2006)	Dominican Republic	HIV	Packages (general population)
127. Terris-Prestholt, F. (2005)	Tanzania	Integrated	Packages (general population), Group IPC, Social marketing, Provider training
128. Terris-Prestholt, F. (2006)	Uganda	Integrated	Live drama, Group IPC, Individual/household IPC, Social marketing, Packages (general population)
129. Teshome, S. (2018)	Ethiopia	Other	Packages (general population)
130. Thakur, J. S. (2016)	India	Other	Packages (general population), Community sensitization
131. Thomsen, S. C. (2006)	Kenya	HIV	Individual/household IPC
132. Vassall, A. (2014)	India	HIV	Packages (key population)
133. Vernon, R. (1988)	Paraguay	FP/RH	Group IPC
134. Vernon, R. (1998)	Colombia	FP/RH	Social marketing, Group IPC
135. Verstraaten, E. J. M. (2017)	Indonesia	HIV	Group IPC
136. Vickerman, P. (2006a)	Ukraine	HIV	Packages (key population), Mixed mass media
137. Vickerman, P. (2006b)	South Africa	HIV	Individual/household IPC
138. Vinekar, A. (2012)	India	MNCH	SMS/phone call
139. Walker, D. (2001)	Belarus	HIV	Packages (key population), Mixed mass media
140. Wesson, J. (2008)	Kenya	FP/RH	Provider training
141. Wilkinson (1993)	Kenya	FP/RH	Newspaper/magazine
142. Willey, B. A. (2014)	Ghana, Kenya, Madagascar, Niger, Nigeria, Tanzania	Malaria	Packages (general population)

LEAD AUTHOR (YEAR)	COUNTRIES	HEALTH AREAS	SBC INTERVENTION
143. Worrall, E. (2008)	Zimbabwe	Malaria	Packages (general population)
144. Ying, R. (2015)	Uganda	HIV	Individual/household IPC
145. Yukich, J. O. (2007)	Eritrea, Senegal, Tanzania, Togo	Malaria, Integrated	Packages (general population), Mixed mass media
146. Yun, S. H. (1990)	Turkey	FP/RH	Mixed mass media
147. Zurovac, D. (2012)	Kenya	Malaria	Provider training

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