

Role of Integrated Information Technology for Responses to Violence Against Women and Children During Covid-19 Pandemic

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Abstract

Background: The restriction and quarantine due to Covid-19 has led to unprecedented disruptions in the lives of women and children. Due to the increase in violence against women and children, the using of e-health has been considered to provide supportive care in this area. The purpose of this paper is developing comprehensive evidence-based framework of e-health intervention to response women and child violence.

Methods: The methodology of this study was based on a two-stage which included literature review at the beginning. In first step a comprehensive review performed for extracting studies that survey the effectiveness of information technology in managing violence against women and child. Researches extracted appropriate articles and summarized important component. The review steps included set questions, search strategy and inclusion/exclusion criteria. The framework was defined based on the literature review and social-ecological model (SEM).

Result: The finalized framework for application IT-based interventions in the management of violence against women and children presented in 4 dimension including individual, relationship, community and societal. The first and second levels of this model include 4 dimensions of SEM and 6 types of violence. The third level includes suggestions for managing violence and the fourth level includes IT-based interventions. Surveillance system and information resource system can be used for monitoring

Conclusion: During Covid-19, domestic violence and economic pressures increased, and vulnerable women and children were at greater risk. It is critical to identify people at risk, to follow and monitor them, to raise the awareness and knowledge of these people, and to empower and provide psychosocial support to these people during this period. In this study, a comprehensive review of IT-based interventions was presented and finally an international framework in this field was described.

Background

According to WHO reports, globally, 31% of women aged 15-49 (almost one in every three women) experience physical and/or sexual intimate partner violence (IPV) or non-partner sexual violence (NPSV) or both in their lifetime (1). The Centers for Disease Control and Prevention identifies four IPV type including physical violence, sexual violence, stalking and psychological aggression (2). The [United Nations \(UN\)](#) defines violence against women as “any act of gender-based violence that results in, or is likely to result in, physical, sexual, or mental harm or suffering to women, including threats of such acts, coercion or arbitrary deprivation of liberty, whether occurring in public or in private life” (3). Gender based violence has increased due to restrictions on the Covid-19 pandemic(4). During this pandemic, there were reports of increased violence against partners (5).

Also children experienced different psychological and physical abuse (6). In many countries, the report of violence-related cases has increased in calls to emergency support lines (7). Child maltreatment defined by WHO as abuse and neglect that occurs to children under 18 years of age. WHO divided child abuse to neglect, physical abuse, sexual abuse, emotional abuse. WHO statistics show 22.6% of child e suffered from physical abuse. This statistics for emotional abuse and physical neglect are respectively 36.3% and 16.3% (8). Reports about prevalence of violence shows that a minimum of 50% of children in Asia, Africa, and Northern America have experienced violence (9). Child maltreatment has many consequences for the child, family and community such as physical and mental problems, disorders in future life and social activity, scientific development, and reproductive health (10, 11).

Also with the outbreak of the epidemic, various strategies were offered to control it, such as quarantine, isolating suspected individuals, national lockdown, Working remotely, etc (12, 13). The restriction and quarantine due to Covid-

19 pandemic have led to increased financial and psychological problems for some people (14). The Covid-19 has led to unprecedented disruptions in the lives of women and children (15, 16). Along with other economic and social initiatives, the WHO has emphasized respecting human rights during this epidemic (4). The WHO has also insists that countries should develop programs and plans in national and international levels to health service delivery for affected peoples and prevent violence (17). According to WHO guidelines, women who experience such violence need immediate interventions to improve their emotional/psychological and physical health (18). Policy makers should aware violence and develop evidence-based interventions to meet the psychological needs of children, women and their families during this epidemic (19). The WHO has developed clinical and policy guidelines for this purpose entitled responding to intimate partner violence and sexual violence against women (20). Some online tools developed to educate provider for presenting support practices and programs including EDUCATE program, REAL Talk and Domestic Violence Education Program (21).

An online platform to recognize and respond to family violence including child maltreatment and intimate partner violence is VEGA (Violence, Evidence, Guidance, and Action) Project. This platform helps healthcare providers to better caring for clients who have experienced family violence (22). Other Evidence-based recommendations for recognizing and responding to IPV are guidelines of WHO (20), NICE (National Institute for Health and Care Excellence), Futures Without Violence and National Health Service (23).

Due to the increase in violence against women and children, the using of telehealth has been considered to provide supportive care in this area. In recent years, many studies have examined the effectiveness of IT tools in providing psychosocial services to different target groups (24). With the advent of Covid-19, the use of telehealth approaches increased significantly to provide behavioral health services (12, 25). Managing violence against women and children is a serious challenge for both patients and service providers. And IT-based tools can be used to help both. Telehealth provide remotely and interactive care through video conferencing. It can be synchronous and asynchronous (26). The purpose of this study is to review information technology (IT)-based interventions in the management of violence against women and children. In continue a comprehensive evidence-based framework of e-health was developed to response this issue.

Methodology

The methodology of this study was based on a two-stage which included literature review at the beginning. In first step a comprehensive review performed for extracting studies that examine the effectiveness of telehealth technology in managing violence against women and child. The authors extracted appropriate articles and summarized important component in table 1 and 2. The review steps included set questions, search strategy and inclusion/exclusion criteria. Searches were developed in August and September 2021. Based on the literature review, the framework was defined.

Inclusion Criteria

Only articles included that implemented an intervention to violence management in women & child and either outcome. At this stage, all the telehealth technologies were included without any restrictions. Studies searched without time limitation. After screening title and abstract full-text were reviewed. Articles were included If reported intervention and its effect.

First step: initial literature study

The search was conducted in the Cochrane Library, Scopus, Embase, ProQuest, PubMed and Google Scholar (the first 10 pages). The keywords for women scope including violence AND domestic violence AND intimate partner violence AND (medical informatics OR telehealth OR telephone OR telemedicine OR social media OR internet OR telemedicine OR email OR geographic information systems OR electronic health OR registry).

The keywords for child scope including (child abuse OR physical abuse OR sexual abuse OR emotional abuse OR neglect) AND (medical informatics OR telehealth OR telephone OR telemedicine OR social media OR internet OR telemedicine OR email OR geographic information systems OR electronic health OR registry). Then articles that used various telehealth tools in response to violence against women and children as an intervention were extracted based on title and abstract. The websites of leading organizations in this field was reviewed, such as the World Health Organization (WHO).

Data Extraction

Two independent researchers reviewed all documents separately to identify eligible studies. Then reports excluded if did not meet the inclusion criteria. Data of included documents entered in to the data collection forms. The disagreements between reviewers were addressed by group discussions. Two reviewers extracted the data from the full text and summarized in the form of a table including setting, purpose, intervention, method (number of target population, study type, length of intervention, duration and follow-up) and result of intervention were determined.

Second step: framework development

According to the result of initial literature review, the framework to response violence against women and child based on IT tools were formulated and designed. In this step, IT interventions related to five types of physical, psychological, economic, sexual and cyber violence were investigated. Violence management were assessed in four levels of social-ecological model (SEM). Social-ecological model (SEM) is used as a framework for violence prevention that has four levels (27). The four levels of this model include individual (Woman & Child), relationship, community and societal levels (28). In this study, SEM model was used to provide a platform for IT-based interventions during the Covid-19 pandemic to prevent violence against children and women.

Result

Review of literature in the field of IT tools application in response violence against women and child

In this study, all relevant literature in the field of IT tools application in response violence against women and child were reviewed. Then a framework was designed based on information of first step as well as WHO and other organization guidelines. Tables 1 and 2 summarize the result of literature review.

Table 1: Summary of studies in the field of IT tools interventions in managing child abuse

Author	Setting	Purpose	Intervention	Method	Result
Dursun et al. (2021) (16)	Turkey	To develop tele psychiatry application to Health Care Workers and Their Children During COVID-19 Pandemics	A mobile application that developed by the Ministry of Health and available in mobile stores.	- Pre-post - N: 1,076 (child & adult) - Video calls contact & If necessary, face to face psychiatric evaluation	- High level of satisfaction among participant
Obikane et al. (2021) (29)	Japan	Prevent child abuse with improving postnatal depression by web-based program	internet-based behavioral activation (iBA) therapy	- RCT - N= 390 Two - Intervention group - Duration: 12 weekly iBA sessions Follow up: 24 weeks	- Improved maternal postnatal depression And child abuse prevention
Gülirmak et al. (2021) (30)	Turkey	Determine the effectiveness of web-based education for prevention of child abuse	Web-based distance education- Website (http://farkindaebeveynler.com)	- Quasi-experimental, randomized controlled - N= 60 parents - Duration: 6-week	- Effectiveness in awareness of emotional abuse in the experimental group
Traube et al. (2020) (31)	USA	development of Parents as Teachers @ USC Telehealth	Home-based parenting programs via interactive video conferencing	- Experimental - Duration: 5 month - 11 personal visits.	- Parent satisfaction of program - High improve in parental supervision
Fogler et al. (2020) (32)	USA	Evaluating acceptability and feasibility of telepsychology to parent training with high quality	Telepsychology BC-ADHD	- Open Trial - N=20	- Approved acceptability and feasibility of telepsychology to parent training with high quality.
Stewart et al. (2020) (33)	USA	Assessing feasibility and effectiveness of telepsychotherapy to deliver trauma-focused cognitive-behavioral therapy (TF-CBT)	Telehealth Outreach Program (TOP)	- Pre-post - N=70	- Meaningful reduction in posttraumatic stress disorder symptoms

Author	Setting	Purpose	Intervention	Method	Result
Luo et al. (2020) (34)	USA	Evaluation of the usability and acceptability of a mobile application	Mobile application called sexual as-sault care algorithm (SACA)	Mixed methods N=4 (SANE)	- High usability and acceptability - Effective in performing tasks and helping to make decisions
van Rosmalen-Nooijens et al. (2017) (35)	Netherlands	Assessing effectiveness and feasibility of the Internet-based self-support method "Feel the ViBe" (FtV)	Feel the ViBe (FtV) (Internet-based self-support method)	- RCT - Intervention group: access to FtV + usual care - RCT - N=40 - Data collection: at baseline and every 6 weeks until 24 weeks	- no significant change in impact of Event Scale - Significant improvements in depression & anxiety

ADHD = Attention-Deficit/Hyperactivity Disorder

BC: Bootcamp

RCT: Randomized-Controlled Trial

SANE: Sexual Assault Nurse Examiners

Table 2: Summary of studies in the field of IT tools interventions in response violence against women

Author	Setting	Purpose	Intervention	Method	Result
The EDUCATE Investigators (36) (2018)	Canada & USA	Measuring impact of IPV educational program on participant readiness to manage IPV.	2-hour educational program including (1) an introductory video, (2) 3 online modules and (3) an in-person training session led by the local IPV champion(s)	<ul style="list-style-type: none"> - Pre-post - N: 140 participants from 7 fracture clinics (6 fracture clinics in Canada and 1 in the United States) - Data gathering: immediate and 3 months after intake 	<ul style="list-style-type: none"> - Significant improvements on 10 subscales including actual knowledge, perceived preparation, perceived knowledge, practice issues, preparation, legal requirements, workplace issues, self-efficacy, alcohol/drug and victim understanding.
Walsh et al. (37) (2019)	USA	Assessing Patient Consent for Telehealth, Effectiveness of Technology and Types of Assistance Provided	<p>Live sexual assault nurse examiner (SANE) services via telehealth (teleSANEs) for adult</p> <p>and adolescent patients</p>	<ul style="list-style-type: none"> - Descriptive study - N = 215 - Sites: six pilot sites 	<ul style="list-style-type: none"> - High levels of consent - Proper system effectiveness - Positive impact of the assistance including guiding clinicians through history taking and documentation, forensic examination and evidence collection techniques, identifying and documenting injuries, and guiding clinical practice.

Author	Setting	Purpose	Intervention	Method	Result
Hegarty et al. (2019) (38)	Australia	Assessing effect of I-DECIDE in self-efficacy and depressive symptoms	Website: An online interactive healthy relationship tool and safety decision aid (I-DECIDE)	<ul style="list-style-type: none"> - RCT - N: 422 - Intervention website modules: healthy relationships, abuse and safety, and relationship priority setting, and a tailored action plan - Control website: static IPV information - Length of follow-up: 6-month and 12-month - Data gathering: at baseline, 6 and 12 months 	- No meaningful differences between groups in self-efficacy and depressive symptoms
Sabri et al. (2019) (39)	USA	Assessing the effectiveness of intervention on safety, mental health and empowerment	Web-based safety decision aid/safety planning (myPlan): weWomen and ourCircle	<ul style="list-style-type: none"> - RCT - N: 1,250 - Length of follow-up: 1 year - Data gathering: at baseline, 3, 6 and 12 months 	NA
Ford-Gilboe et al. (2017). (40)	Canada	Assessing effectiveness of <i>iCAN</i> in improving the health and safety for women experiencing IPV	<i>iCAN</i> Plan 4 Safety (a tailored, online safety and health intervention)	<ul style="list-style-type: none"> - RCT - N= 450 - Length of follow-up: 1 Y 	- Effective in managing depression and PTSD symptoms

Author	Setting	Purpose	Intervention	Method	Result
Steinmetz et al.(41)(2016)	USA	Providing individual therapy to survivors of sexual assault and domestic violence in rural areas	Videoconference	<ul style="list-style-type: none"> • Pre-post • Developed by The Wyoming Trauma Telehealth Treatment Clinic (WTTTC) • Session number: six or more sessions took place weekly • Trauma-focused therapy • Duration: 60–90 min • Measuring PTSD, depression, and satisfaction of sample in pretreatment and post treatment 	<ul style="list-style-type: none"> • Meaningful decrease in PTSD symptoms • Reduction in depressive symptoms • high levels of satisfaction
Constantino et al. (2015) (42)	USA	Assessing the effectiveness of the HELPP among IPV survivors	Online HELPP (Health, Education on Safety, and Legal Support and Resources in IPV Participant Preferred)	<ul style="list-style-type: none"> • Pre-post • N:34 • Duration: 6 weeks • Text communication via email 	<ul style="list-style-type: none"> • Decrease in anxiety, depression, anger • And increase in personal and social support in intervention group
Stevens et al. (2015) (43)	USA	The effectiveness of Telephone Support Services (TTS) to prevent further intimate partner violence	12 phone calls with a total duration of 360-720 min over 6 months	<p>- RCT</p> <p>- N= 253</p> <p>- Intervention group (129) received telephone support services (TSS)</p> <p>- Data gathering: at baseline, 3 and 6 months</p>	- No significant difference between the control and intervention groups in IPV victimization, cohabitation with perpetrator, depressive symptoms and PTSD symptoms.

Author	Setting	Purpose	Intervention	Method	Result
Saftlas et al.(2010)(44)	USA	Evaluating effectiveness of motivational interviewing (MI) self-efficacy, stage-of-readiness-to-change, and depressive symptoms among women in abusive relationships	Telephone calls	- RCT - N=204 -Intervention group: initial face-to-face session and three telephone sessions (1-, 2-, and 4-months post enrollment)	- Decrease in depressive symptoms decreased - No significant difference between the control and intervention groups in Self-efficacy and stage-of-readiness-to-change increasing.
Tiwari et al. (45) (2012)	China	Measuring effectiveness of advocacy intervention for women experiencing IPV	telephone social support	- RCT - N= 200 - Duration of telephone calls: 30 min - Intervention group: 12 weekly telephone calls and 24-hour access to a hotline - Data gathering: baseline, 3 months and at 9 months after intake	- Reduction in depression and psychological aggression, improvement in perceived social support and the use of safety-promoting behaviors
Tiwari et al. (2009) (46)	China	Measuring effectiveness of advocacy intervention for women experiencing IPV	telephone social support	- RCT - N= 200 - Duration of telephone calls: between 15 and 20 minutes - Intervention group: advocacy intervention and telephone social support at the beginning of the intervention - Data gathering: at baseline, 3 and 9 months after intake	<ul style="list-style-type: none"> • Positive change in quality of life and perceived social support • No significant difference in reducing the depressive symptoms.

Author	Setting	Purpose	Intervention	Method	Result
Koziol-McLain et al. (2018) (47)	New Zealand	Measuring effectiveness of a Web-based safety decision aid (isafe) for women experiencing IPV	Web-based safety decision aid (isafe)	- RCT - N= 412 - 12-month follow-up - Intervention group: website with safety priority setting, danger assessment and individualized feedback or tailored action plan	- Effective in reducing violence and depression symptoms in indigenous Māori women.
McFarlane et al. (2004) (48)	USA	Increasing safety-promoting behavior in abused woman	Telephone intervention	- Experimental study - N= 150 -Intervention group: received the usual services and 6 telephone calls - Data gathering: at 3, 6, 12, and 18 months	- Increasing safety-promoting behavior in intervention group
Thomas et al. (2005) (49)	USA	Assessing effectiveness of a telemedicine program	Telemedicine program (teleconference sessions)	- Semi-experimental study - N: 38 - teleconference sessions with telephone and facsimile contact - Number of session: 3 in the 4–6 weeks	- Good performance on screening, treatment and referral

IPV: Intimate Partner Violence

RCT: Randomized-Controlled Trial

TTS: Telephone Support Services

In the next stage 4 level of SEM was surveyed. In result four dimensions of violence against women and children and IT-based interventions were investigated. The four levels of individual, relationship, community and societal for woman & child was described. Then a comprehensive model in this field was presented.

Individual (Woman & Child) Level:

Individual level factors include age, level of education, history of alcohol use, history of violence and marriage at a younger age (50). Young age in marriage leads to increased exposure to violence due the husband is superior to the women (51). These risk factors had a greater impact during the Covid-19 pandemic (27). Web-Based safety decision

was effective in reducing violence and depression symptoms (47). Long periods of Covid-19 quarantine have been associated with post-traumatic symptoms Stress Disorder (PTSD), anxiety, anger and boredom (52). Online interventions at the individual level of violence against women and children increased during the Covid-19 era (53). Remote counseling provides fair access to psychological support for children (29).

Online interventions are one of the effective methods (54). Health care professionals need to be aware of all the demographic, psychological and psychological histories of the injured woman and children for supporting, especially during a pandemic (27). Clinical decision support systems for child abuse are effective in improving the decisions of practitioners and physicians (55). Integration of child abuse screening system with electronic health record in a large health care network can increase the possibility of recording reports of children exposed to violence (56).

Development of an interpersonal-violence registry system (IPVRS) is an effective approach to tackle violence. Recording, evaluating and monitoring risk factors, especially alcohol consumption, is very helpful in supporting vulnerable people and prioritizing policies. The geographical distribution of vulnerable people based on health habits and other risk factors can be identified using the registry. Social and economic indicators are also recorded and analyzed. Barriers to accessing care services can also be addressed through the registry system. International classification systems support the systematic recording of information in the registry system. The place and time of the violence occurred, manner and frequency of the violence can be traced through international classification systems. The number and type of services provided, the name and type of service provider and the specific outcome of the services provided can be monitored (57). ICD11 as international classification includes criteria for intimate partner violence, neglect and child abuse and neglect (58) and ICD-11 online interface to find and search the classification codes of disorders (58).

Covid-19 pandemic had a significant impact on child abuse and neglect (CAN)(59). Online education and gamification can be used for empowering of children and psychological support (60).

Relationship Level:

This level relates to a person's closest friends, partners and family, and marital family issues can affect them. The three dimensions of this level are: multiple partners, arranged or forced marriages relationship satisfaction and marital conflict. Communication skills training programs focusing on culturally appropriate conflict management should be designed for couples (50). Experts and health care providers have identified several benefits of using remote support, such as dealing with isolation, reducing deterrence, fear and embarrassment, and enhancing victims' empowerment (3). Gender equity in household is critical issue (61) and analyzing of status of high risk can be used for effective procedure.

Due to social distance, vulnerable people cannot improve their communication under psychological support primary care physicians, professors, friends or family. It also reduces the motivation for these people to seek professional help digital communications can be the key solution (27). Social support and having social capital is a key factor for vulnerable population. In some cases, social distance may prevent social support. Social support was affected during the pandemic due to limited resources and social distance. While social support is very effective in improving mood. Also access to social resources depends on the economic situation of women (27)

Community Level:

The three dimensions of this level are: poverty, social support and employment opportunities (50). Reducing court access to legal protections, reducing face-to-face support sessions and physician attention, access to essential

services such as access to affordable emergency housing, and seeking help are some of the challenges of the pandemic era. Supportive childcare is reduced and the economic burden as well as the opportunity to escape abuse is increased. During this period, the use of rape crisis centers, domestic violence shelters, and other social organizations and free resources became more limited. Remote service based on priority can be one of the solutions (27). Sheltering policies based on priority are important at this level (50).

Education and empowerment increase access to resources in society, increase self-confidence, and improve high-income employment for women. Economic dependence increases the risk of violence and economic opportunities need to be created to increase employment status of women living in rural areas. (50). Online interventions for empowering is a key solutions (62). Fair resource access to all affected caregivers is an significant issue (27).

Societal Level:

There are four items at this level: Men's superiority and dominance over women, acceptance of violence, cultural practices and Laws & policies (50).

The current US recession is a threat during the Covid-19 era and will continue after the pandemic. Economic stress increases for vulnerable people whose incomes are declining or who are unemployed (27). In addition to economic conditions, the closure of kindergartens and schools has affected women and have more internal responsibilities than men in domestic relationships (63). Risk of sexual abuse due to financial instability and less access to essential resources increase (64).

One of the important issues is to identify the cultural dimensions associated with the intimate partner abuse (65). Identifying the cultural and contextual research factors in the field of violence is essential. An interpersonal-violence registry system can be effective in collecting and analyzing information and prioritizing in this field (57). Improving children's social skills through IT-based interventions can be effective in preventing violence (61).

Recommended Framework:

IT-based interventions were reviewed in these 4 phases based on SEM model (figure1). IT tools based on evidence-based method in the four level was described. IT tools of individual level includes these items: violence registration system, smartphone, SMS Reminder, social media, websites and portal, e-mail, video conferencing, tele –consultation technology, Global Positioning System (GPS), GIS and wearable tracking device. IT tools of relationship level includes: violence registration system, smartphone, SMS Reminder, social media, websites and portal, E-mail, video conferencing and Tele –consultation technology. IT tools of community and social level includes: smartphone, SMS reminder, social media, websites and portal, national and international non-governmental organization (NGO) network, E-mail, video conferencing, Tele –consultation technology, screening information system, electronic health record, clinical decision support system, intelligent system/deep learning/machine learning, data mining, ICD-11 Online and E-dashboard (Figure 1). Tasks of 4 stakeholders in the field of violence against women and children and their areas of responsibility were presented with the help of IT-based interventions (Figure 2). Table 3 presents six recommendation for violence management and IT-based solutions. Finally, integrated information technology model presented for responses to violence against women and child during Covid-19 pandemic (Figure 3). The first and second levels of this model include 4 dimensions of SEM and 6 types of violence. The third level includes suggestions for managing violence and the fourth level includes IT-based interventions. Surveillance system and information resource system can be used for monitoring (Figure 3).

Table 3: Six recommendation for violence management and IT solutions

Recommendations	IT Solutions
Detecting high risk individuals	<ul style="list-style-type: none"> -Identifying high risk individuals via electronic health record by age, level of education, habits, history of alcohol use, history of violence, marriage at a younger age, physical and mental status/personality disorder - Identification of child abuse via registry system and emergency alert system - Child abuse clinical decision support integrated with Electronic Health Record for detecting - Tele-triage of vulnerable Individuals - Predictors of violence against children and machine learning method
Tracing and tracking	<ul style="list-style-type: none"> - Wearable tracking device for vulnerable individuals with disability - GPS and GIS tracking device for vulnerable individuals with disability
Empowering of vulnerable individuals and health care providers	<ul style="list-style-type: none"> - Training of health care providers by e-guidelines, pathways and decision support system for violence management - Access to demographic, physical and psychological information of vulnerable individuals for awareness of health care professionals - Improving children's social skills through educational portals - Mobile health-based platforms for training of parent and children - Improving self-management and self-esteem efficacy via tele-consultation programs - Promoting knowledge, attitude and practices via web based portal, mobile application, social media and motor engine - Training on reporting IPV cases by health care providers
Legal & Economic Support	<ul style="list-style-type: none"> - Automated court access - Sheltering policies based on priority by IPVRS reporting - Virtual entrepreneurship
Access to health care services	<ul style="list-style-type: none"> - Determination of violence severity via DSS and intelligence system - Fair resource access by reporting of IPVRS and public information system
Social and Mental Support	<ul style="list-style-type: none"> - Improving Social skill for vulnerable individuals by online campaigns. - Supporting of post-traumatic symptoms Stress Disorder (PTSD), anxiety, anger and boredom, depression symptoms via digital communication -Intelligence place-based emergency services - Online education and gamification - Tele consultation by Risk of sexual abuse
Governance & Management	<ul style="list-style-type: none"> - Evidence based decision making via IPVRS and public health system - Allocation of resources and service management based on priority by e-dashboard - Establishment of policy and legislation by reporting of public information system - Gender equity in household

The finalized framework for application IT-based interventions in the management of violence against women and children presented in 4 dimension including individual, relationship, community and societal. In this study, after reviewing the eligible articles, as well as WHO and CDC websites, E-health framework were compiled in four dimension.

Discussion

The integrated electronic health record accelerates the possibility of accurate triage by accessing the comprehensive information of the invulnerable children. Decision support system allows physicians and nurses to review and analyze diagnostic and triage guidelines (55). Intelligence tools are used to train caregivers, especially in the field of public health. Big data analysis increases the possibility of cost-effective preventive interventions in the field of child violence (61). In the proposed model, machine learning interventions and decision support system are considered. Risk assessment and modeling of determinants can be used for selecting best intervention. Mobile health-based platforms increases access to psychiatric services for children and families (61). Predictors of violence against children in the field of negligence can be surveyed (66, 67).

The use of IT-based approaches to support people that affected by social problems has increased during the Covid-19 epidemic. For example, one study conducted to determine the type of support victims of violence against women and domestic violence (VAWDV) by the support professionals in the Portuguese during the COVID-19 pandemic. The result presented that the telephone was most common tool to provide support services (3). In this study, smartphones as IT solutions was considered.

The Veteran's Health Administration (VHA) developed Intimate Partner Violence Assistance Program (IPVAP) that present IPV support and prevention services to veterans, their partners, and affected employees. In this program, affected women supported by through Strengths and Empowerment (RISE), that is patient-centered, evidence-based and trauma-informed brief counseling intervention (68). The study of Slupska et al. confirmed that safety-planning application named "myPlan can lead to empowering IPV survivors (62).

Social media are used as a platform for sharing the experiences of affected women, Hearing the voices of injured women, introducing supporting organization & services, documenting rape cases and the function of justice system in dealing with these cases in different cultures (69). On the other hand, misuse and anonymity in social media leads to the spread of false culture, changing sexist attitudes and offline behavior, and greater hostile sexism (70). One of the main challenges of telehealth for women experiencing IPV is the privacy and security, which leads to limitations in its acceptance by the court houses and some agencies (68). In the section of policies and legislation in the presented model, this axis has been considered.

In some studies, the purpose of the intervention was to help care providers for rapid decision-making especially in emergencies. A technology for further acceptability must evidence-based, easy to use, user-friendly requires less time and provide a quick solution (34). It should be noted that the results of all studies did not confirm the effectiveness of the system, in some studies, no significant difference was observed between the intervention and control groups (35, 38, 43). Health care providers should also receive training in identifying and reporting cases of domestic violence or child abuse and neglect (8), And IT tools can be used to improve this .

To measure the effectiveness of IT based interventions in this field requires further studies with large sample sizes. The key to successful use of a technology is the support of senior executives and all stakeholders. Also users of these tools should have internet literacy and access to the necessary resources and infrastructures (35). Adequate knowledge is very important when using these technologies by support service providers and victims and their

families. Therapists must receive the necessary training to provide services and intervention (41). Reporting IPV cases by health care providers is also important. In this context, this was considered.

Conclusions

Managing violence against children and women during the Covid-19 period is one of the key issues. Social isolation and physical absence increase the conditions for child abuse and violence against women. Domestic violence and economic pressures increased, and vulnerable women and children were at greater risk. It is significant issue to identify people at risk, to follow and monitor them, to raise the awareness and knowledge of these people, and to empower and provide psychosocial support to these people during this period. In this study, a comprehensive review of IT-based interventions was presented and finally an international framework in this field was described.

Declarations

Ethics approval and consent to participate

Not applicable

Consent for publication

Not applicable

Availability of data and materials

Not applicable. Data sharing is not applicable to this article as no datasets were generated or analyzed during the current study.

Competing interests

No conflict of interest declared.

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Authors' contributions

Elham Masert: Design, Gathering data, Analysis and Interpretation of data, Article writing

Zeinab Mohammadzadeh: Design, Gathering data, Analysis and interpretation of data, Article writing

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Figures

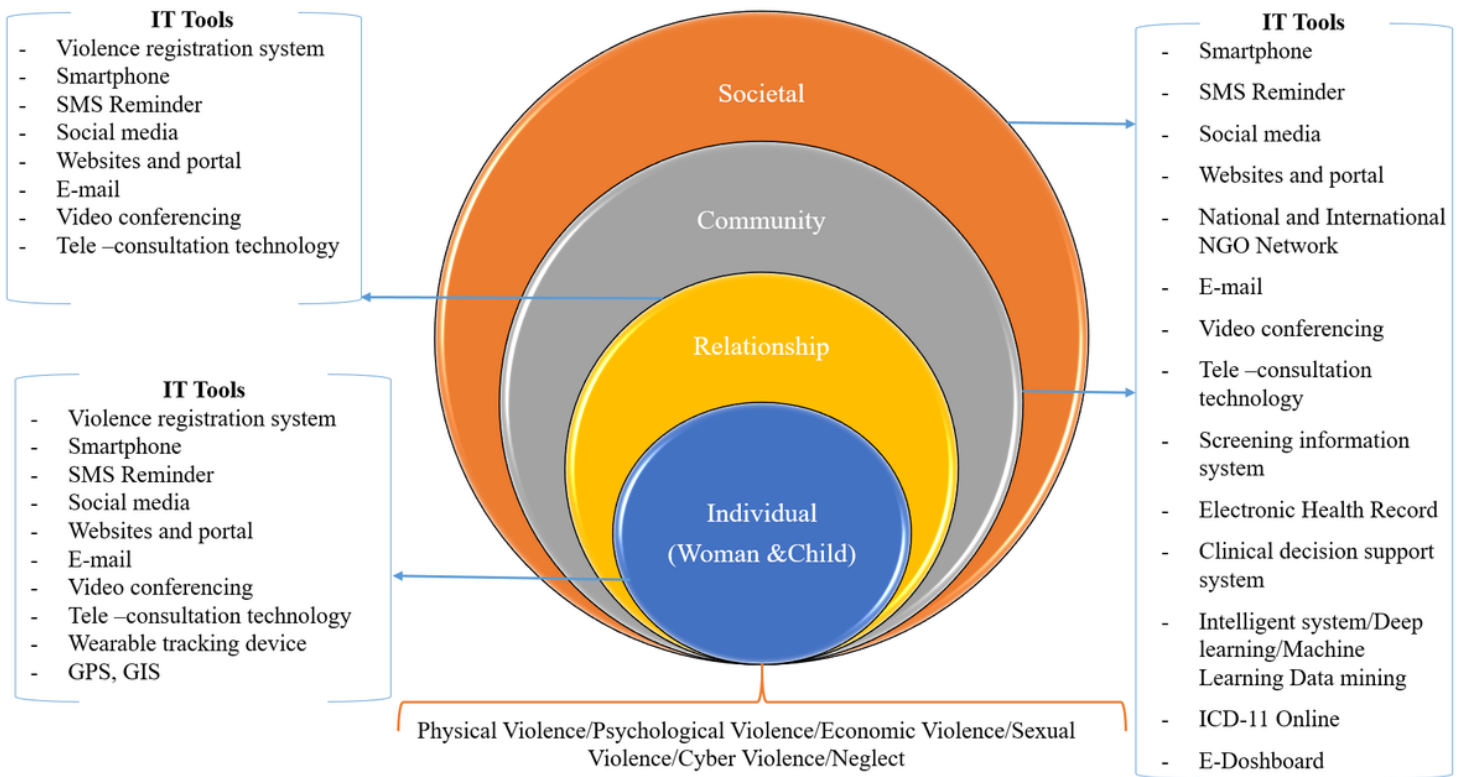


Figure 1

IT tools intervention in SEM levels

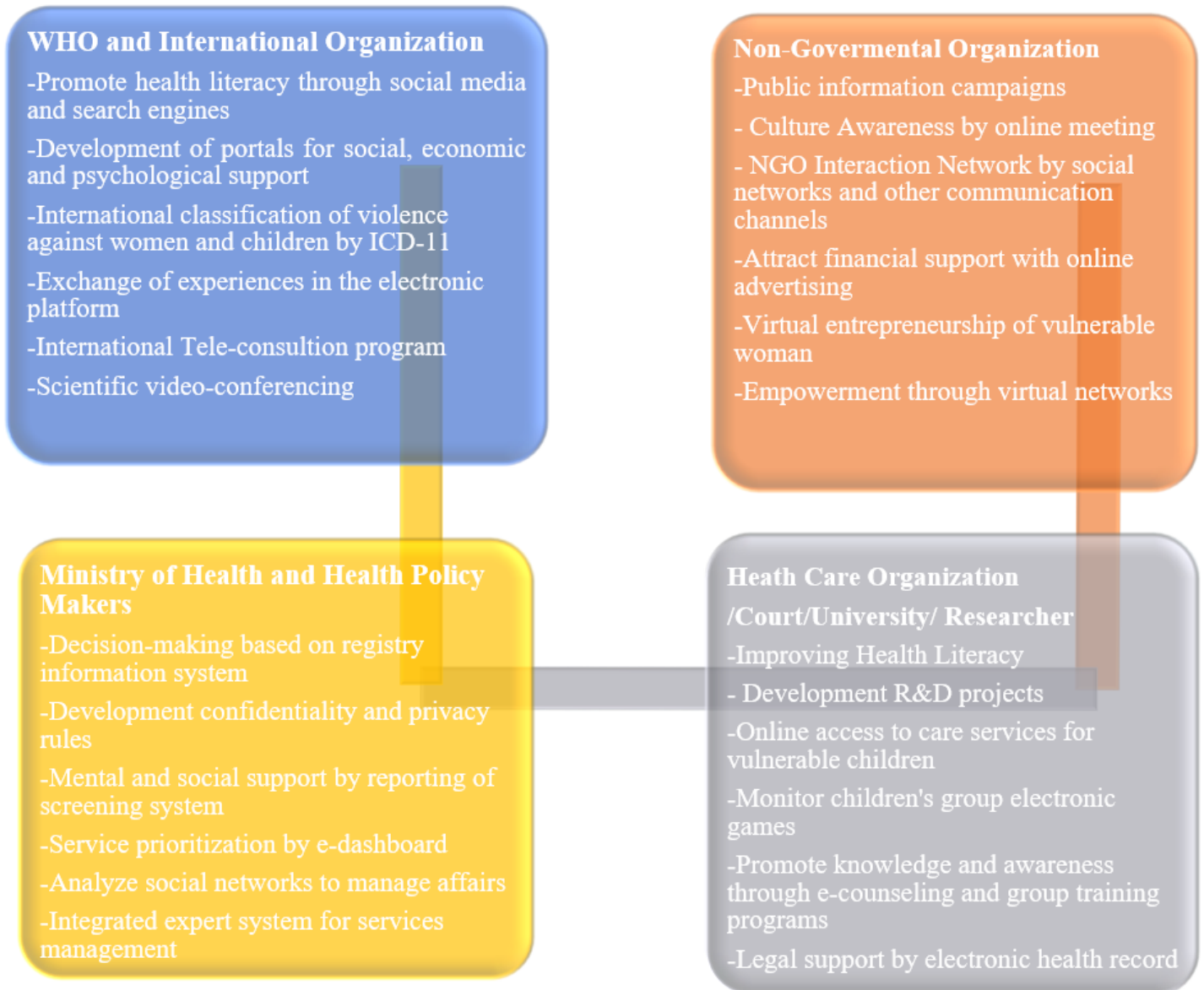


Figure 2

Stockholders of violence management & IT intervention

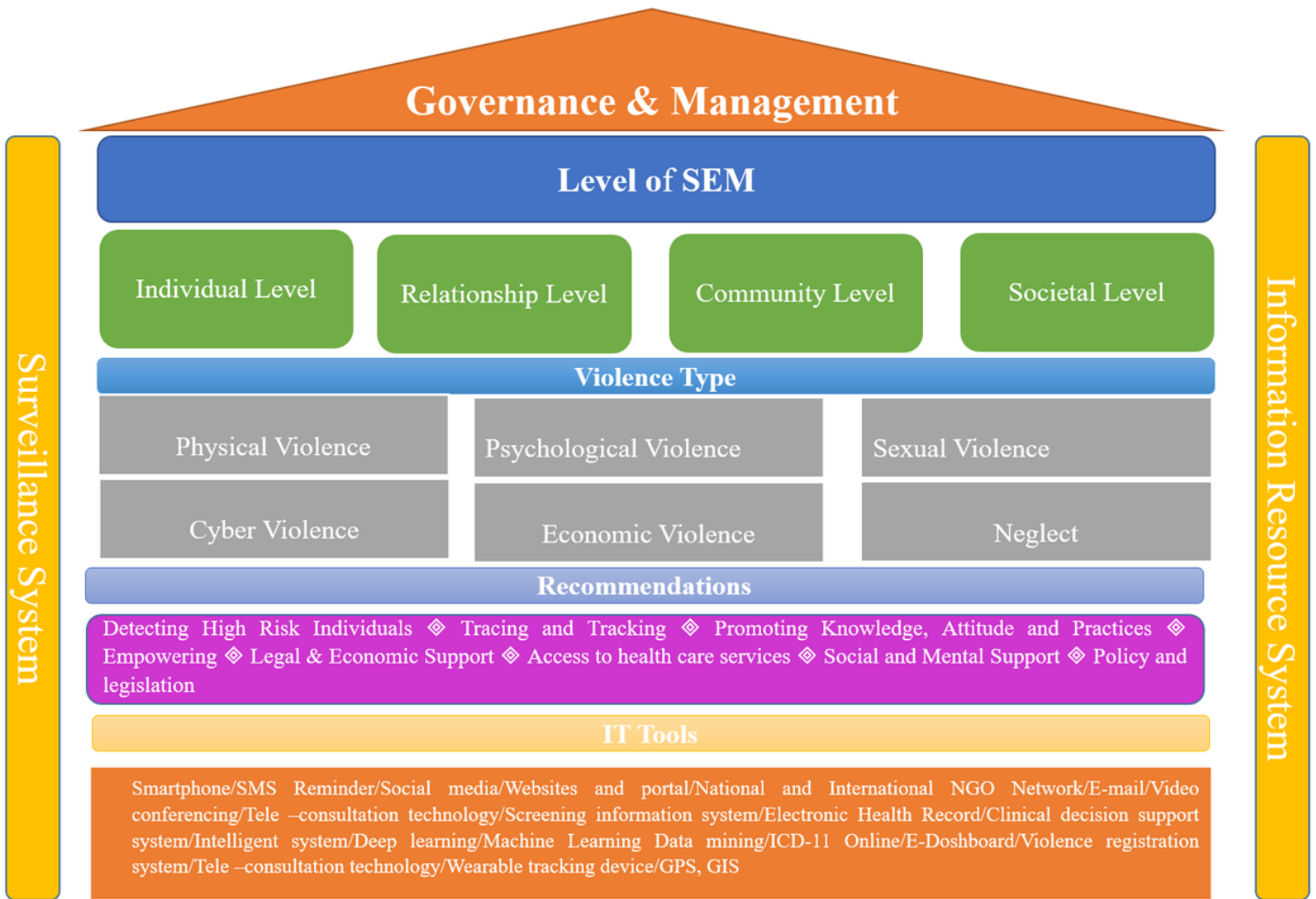


Figure 3

Model of violence management & IT response