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Assessment of Pharmacists Providing Care in the Out-Patient Clinics Setting Through Telemedicine Models in Makkah City, Saudi Arabia in 2022

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Abstract:

Background:

Over the past 20 years, owing to rapid advances in technological innovation, namely in telecommunication and telemedicine, healthcare institutions have integrated clinical practices with cutting-edge telecommunication technology to enhance access to patient care, improve continuity of clinical care, and ensure patient safety. Pharmacists providing care in the out-patient clinics setting through telemedicine models. Pharmacy services were found to be essential in establishing outcome-oriented pharmacist-led medication management for patients. The established telemediation management clinic (MMC) services enhanced patient engagement and treatment compliance, and the integration process and its challenges were assessed. the pharmacist-led MMC services were beneficial to chronic disease patients and ensured the continuity of care, maintenance of up-to-date lab tests,management of polypharmacy, minimization of the use of unwanted medications and medication synchronization.

Aim of the study: ToAssessment of pharmacists providing care in the out-patient clinics setting through telemedicine models in Makkah City, Saudi Arabia in 2022.

Method: cross sectional study conducted at outpatient clinics in Al-Aklas primary health care center in Makkah Al-MukarramahSaudi Arabia inSample population consists of Saudi out patients aged 20 to over than 60 years attending. Our total participants were (200**).**

Results: Regarding the age majority of the study groups were in the age range of (20 - 40%) years were (37.0%) followed by (40-60) years were(33.0%), regarding the gender many of the respondents were male (58.0 %) while female were (42.0%). Regarding the education status, the majority of the respondents had Primary were (32.0%) , while Occupation the most of the participants answer Yes were (75.0%).Regarding the income The majority of them had an income from less than 3000SR were (31.0%) .

Conclusion:pharmacists providing care in the out-patient clinics setting through telemedicine

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models, based on pharmacist-led medication management services. The implementation of this model demonstrated a significant improvement in the clinical outcomes of patients and might help to improve the overall satisfaction during and after the peak pandemic period. The integration of the telehealth framework with a pharmacist-led medication management clinic was associated with promising outcomes in the access to and continuity of patient care during health care disruptions and the maintenance of pandemic regulations.

Keywords: assessment, pharmacists, providing, care, out-patient, clinics, telemedicine models,Makkah City.

Introduction

Background

Tele-pharmacy is the delivery of pharmaceutical care to patients using audio-visual telecommunication and information technologies remotely.(1)Utilization of telemedicine allows pharmacists to extend the reach of clinical interventions, connecting them with patients andproviders, but the overall impact of these services is very important,(2) medication adherence pharmacists providing care in the out-patient clinics setting through telemedicine and is defined as taking medications as through telemedicine advised and prescribed by health care professionals for stated duration.(3) Telehealth, also known as telemedicine, is defined as the use of electronic communication to exchange information regarding health from one area to another to improve a patient's outcomes.(4) Telehealth tools have become an integral part of the health care system; they enhance access to medical care, improve the patient experience, and most importantly, maintain continuity of care. Therefore, it is imperative to implement a telehealth model toprovide medication management services to patients to improve patient engagement, enhance health outcomes, reduce healthcare costs, and improve clinical care.(5)

The COVID-19 pandemic has stretched the capacity of the healthcare systems, increasing demand for life-saving medications, revealing disturbing barriers in patient care access, andexacerbating the shortage of healthcare professionals(6). This crisis hasplaced tremendous pressure on the frontline medical teams, stimulatingcooperation among different medical professionals to combat the pandemic (7). Over the years, pharmacists have been working hard to prove and establish themselves as core members in the provision of patient care, and today, amid the pandemic, they have had the opportunity to effectively embrace their role as frontlinehealthcare providers shifting the concept of the pharmacy profession (8). Apart from their initial patient centered role, community pharmacists were involved in controlling the SAR-COV-2 virus transmission, assessing potential COVID-19 carriers, and triaging suspected cases (9).

Digital health is defined by the World Health Organization as “the field of knowledge and practice

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associated with the development and use of digital technologies to improve health." It is a broad term and includes mobile health (mHealth), eHealth, telehealth, pharmacists providing care, telemedicine, and other artificial intelligence applications in health care (10,11).

The use of telemedicine for pharmacists has been reported in a variety of forms, from the 1960's onwards, and it has been defined in a variety of ways. "Telemedicine is the use of telecommunications for pharmacists providing and patient care. It involves the use of telecommunications technology as a medium for the provision of medical services to sites that are at a distance from the provider.(12)The concept encompasses everything from the use of standard telephone services through high speed, wide band width transmission of digitized signals in conjunction with computers, fiber optics, satellites and other sophisticated peripheral equipment and software pharmacists providing by care in the out-patient clinics setting through telemedicine ,(13)" Some of the early projects were part of pharmacists providing technology research programmes (14), but from its beginnings telemedicine has been used in a variety of health care fields. For example, it has been used in provide remote pharmacists service and children's care, psychiatry and pharmacists providing, pediatrics', and to provide expert general medical advice from a teaching hospital and centre although these early projects appeared successful clinically and technically, widespread interest and enthusiasm among healthcare providers has only now become apparent, with the development of more sophisticated technology.

Review of literatures

The incorporation of telemedicine tools into current pharmacist-led medication management services efficiently utilizes time, resources, and clinical pharmacist expertise to generate a patient-centered care model.(15) The Ministry of Health (MOH), Saudi Arabia, initiated the telehealth framework in line with the Saudi Vision 2030, with the aim of developing telehealth networks.(16) Recently, the Coronavirus 2019 (COVID-19) pandemic imposed challenges on providing quality health care services in the Kingdom of Saudi Arabia and throughout the world.(17) During the crisis, the Saudi MOH launched a mobile application for online consultation and improved the continuity of care.(18)

In Saudi Arabia, the initiatives to adopt eHealth and telehealth services date back to more than three decades.(19) For example, the Center of eHealth was established at the King Faisal Specialist Hospital & Research Centre in Riyadh, which is considered a tertiary hospital and one of the leading institutions in the Middle East. The center has international cooperation via videoconferencing with other centers around the world, and it has telemedicine network centers distributed in many regions in Saudi Arabia to deliver health care , pharmacy's providing care

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through telemedicine models and consultation to distant areas (20)

Recently, in 2017, as part of Saudi Arabia's Vision 2030, the implementation of the digital transformation plan for the public and private health sectors began. Consequently, the Saudi Ministry of Health (MOH) has created many mobile apps to facilitate administrative processes for patients and to allow them to obtain medical consultations and refill their medications(21). For example, the Saudi MOH introduced Mawid, which acts as a national platform to book medical appointments and to manage referrals from primary care centers to specialized centers(22). In 2019, the Saudi MOH launched Sehhaty, which provided personal health information and improved knowledge about public health and healthy lifestyles; it was subsequently used to book COVID-19 vaccine appointments(23). Moreover, the Saudi MOH introduced a call center (937) that received calls and offered answer services for the patients and clients for any medical questions related to symptoms or medications(24). During the COVID-19 pandemic, the government launched several mobile apps to prevent the spread of COVID-19. The government introduced Tetamman to guide and help people who were under isolation because of contact with infected persons or those returning from abroad.(19) The Tawakkalna app was used to provide movement permission during curfew times and as electronic personal identification that included all national documents and provided information on the infection status of people, allowing them to enter restaurants, supermarkets, and governmental authorities. In August 2020, an app named Tab aud was used for contact tracing of infected cases (25).

Rationale

Pharmacists providing care in the out-patient clinics setting through telemedicine models and medication adherence can be defined as taking medications on time as advised and prescribed by healthcare professionals for the stated duration .to this issues pharmacists providing care through telemedicine is very impotent. It is one of the challenging global issues; non-adherence to medication results in active disease progression and increased treatment costs . According to the literature, almost 50% of the patients suffering from chronic illnesses do not adhere to their medication regimen and half of them indulge in non-adherence after a year of treatment. This non-adherence further results in disease related complications and comorbidities that may increase the frequency of hospital admissions, emergency visits and direct treatment costs. These direct costs, depending upon the healthcare sector of a country, may either be borne by the health sector or in some cases the patient.

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Aim of the study

To Assessment of pharmacists providing care in the out-patient clinics setting through telemedicine models in Makkah City, Saudi Arabia in 2022

Specific objective

- To Assessment of pharmacists providing care in the out-patient clinics setting through telemedicine models in Makkah City.

Methodology

Study setting:

This study has been conducted at outpatient clinics in in Makkah City, Saudi Arabia

Study Population

The study population consists of Saudi out patients clinics aged 20-more than 60 years attending to outpatient clinics in in Makkah City, Saudi Arabia.

Study Design

Cross-sectional, analytic study , systematic random sampling technique

Inclusion criteria:

- Out patients aged 20-more than 60 years
- Able and willing to participate in the study.
- Take some sort of prescribed medications.

Exclusion Criteria

- Out patients less than 20 years
- Not able and refuses to participate in the study.

Sample size:

Using EPI info version 7 (50), the study sample size has been determined based on the following assumptions :

Since there is not an official release, e.g., by the "Central Department of Statistics and Information" in Saudi, of the exact census of Makkah City residents falling within the study's age category, a source population size of the same of has be assumed. (Definitely, the true population of such category is greater , also to be most conservative, the least number needed for a reasonably large sample size that allows generalizability of the study result.

A given estimate that patients with expected frequency of having awareness of PMS = 15%. Tolerable error 5%. Confidence level = 95%. Design effect (for cluster surveys-DEFF) =1. Accordingly, a sample size (n) would be (200). In order to account for non-response and achieve more generalizable results, the investigator has be increase the sample size up to 200.

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Sampling Technique:

Makkah City Regarding health care center selection, there are three health care sectors inside Makkah Al-Mukarramah which are Al-Ka'akya, Al-Zahir and Al-Adl. By using simple random sample technique (by using randomizer.org), Al-Adl health care sector was selected. There are 12 primary health care centers under Al-Adl health care sector which was enumerated from 1 to 12. Again, by using simple random sample technique Al-Adl primary health care center was selected (by using randomizer.org website). Regarding patients' selection, the total number visiting Al-Adl PHC is 1711 per month and the sample size is 200. The data collection period is 20 days (four weeks minus weekends). Every day there are nearly 85 patients attending in Al-Adl PHC in both section (male and female sections). To collect data from sample size, the researcher needs nearly 18 patients per day to collect desired sample size. The researcher has been selecting every 4th patient to cover the sample size during data collection period .

Sampling method:

Makkah citythe total number of elderly patients attending Al-Adl primary health care center (under Al-Adl health care sector) in one month is 1711. Based on this information sample size was calculated using a website (raosoft.com). The resulted estimated sample size is 200 patients. The confidence interval is 95% and margin of error is 5%. The estimated prevalence used is 50% to calculate maximum sample size.

Data collection method:

Self-administered questionnaire has been given to all participants. Those who have trouble reading or writing the questionnaire, has be filled by the interviewer.

Questionnaire:

An Arabic self-administered questionnaire has been used. It consisted of three sections. The first section is on the socio-demographic and presence of chronic disease, and present medication history (e.g., age and education level). The second sections cover pharmacists providing care in the out-patient clinics setting through telemedicine models (patient, medication, health care related factors). The third section addresses the part the possible suggestion to increase the patient level of pharmacists providing care in the out-patient clinics setting through telemedicine models**.**

Data Collection Technique

The researcher has visit the health care center Makkah City The researcher has filled the

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questionnaires through the interview with patients who are attending elderly patients attending health care center Makkah City met the inclusion criteria after taking their verbal consent. After obtaining necessary approvals, the researcher and one trained nurse used aSince all Makkah centers work on walk-in basis, i.e., using "systematic random sampling" technique .

Data Entry and Analysis

Data has been collected and coded and then entered to a MS program with adequate backup. Descriptive statistics, e.g., number, proportions, cumulative proportions, mean and standard deviation, etc. has been displayed, as appropriate. Analytically, a parametric technique, e.g., t-test and ANOVA, has been attempted, as applicable, especially analyzing normally distributed variables. Otherwise, a non-parametric alternative, e.g., Man Whitney U test and ANOVA or χ^2 test of independence, has been used, as necessary. The Statistical Package for Social Sciences (SPSS) software for MS- version-20 will be used for the analysis. All tests has been conducted at level of significance a=0.05; results with p-values<0.05 has been considered "statistically significant".

Pilot Study

A pilot study has been done on 10 Saudi patients who meet the study's eligibility criteria. The pilot study has been mainly helped examine both the instrument's content validity and construct validity issues, alongside with other needed information.

Ethical Considerations

Necessary approval has been the Research Ethics Committee of the PHC in Makkah, shall be obtained prior to the study .

A written consent has been obtained both from PHC, Makkah region administration. The aim of the study has been explained to them. Feedback about the results has been sent to these organization, data has been treated confidentially and has been used only for the purpose of research .

Budget : Self-funded.

Results

Table (1) Distribution of the Baseline demographic data of the sample of pharmacists providing care in the outpatient setting through telemedicine model (n=200)

	N	**%**
Age		
20-40	80	37

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40-60	56	33
More than 60	64	30
Gender		
Female	60	42
Male	140	58
Education		
Illiterate	16	12
Primary	22	23
Preparatory	38	20
Secondary	40	18
University	84	27
Occupation		
Yes	130	75
No	70	25
Income		
Less than 3000SR	52	31
3000-6000SR	44	19
6000-9000SR	38	29
More than 9000SR	66	21

Regarding the age majority of the study groups were in the age range of (20 - 40%) years were (37.0%) followed by (40-60) years were(33.0%), regarding the gender many of the respondents were male (58.0 %) while female were (42.0%). Regarding the education status, the majority of the respondents had University degree were (27.0%) followed by Primary were (32.0%) , while Occupation the most of the participants answer Yes were (75.0%).Regarding the income The majority of them had an income from less than 3000SR were (31.0%) .

Table (2) Distribution of the Views of pharmacists regarding the need for coverage of the pharmacists providing care in the outpatient setting through telemedicine models

Question						% of agreement	Chi-square	
		Low	Average	high	Very high		X^2	P-value
What do you think	**N**	90	87	57	66	58.25	10.320	0.016*

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of the current coverage of telehealth and digital health in the Pharm D program	**%**	30	29	19	22			
To what extent is training in the use of telehealth necessary for pharmacists?	**N**	45	66	39	150	74.5	105.360	<0.001*
	%	15	22	13	50			
To what extent you are familiar with electronic health and drug information apps and databases (eg, Up To Date) .	**N**	78	69	57	96	64.25	10.800	0.013*
	%	26	23	19	32			
To what extent do you believe the need for training in the use of telehealth apps and pharmacy informatics is necessary	**N**	126	51	81	42	53.25	57.360	<0.001*
	%	42	17	27	14			

Table (2) shows the Views of pharmacists regarding the need for coverage of the pharmacists providing care in the outpatient setting through telemedicine models. Regarding What do you think of the current coverage of telehealth and digital health in the Pharm D program answer Low were (30.0%) followed by average while % Of agreement(29. 0%) were a significantly associated were P< 0.016 and X^2 (10.320).

Regarding To what extent is training in the use of telehealth necessary for pharmacists the majority of our participant Very high were (50.0%) while average were(22.0%) while % Of agreement (74.5%) were significantly associated were P< 0.001 and X^2 (105.360). Regarding the To what extent you are familiar with electronic health and drug information apps and databases (eg, Up To Date) the majority of our participant Very high were (32.0%) while low were(26.0%)while a significantly were P< 0.013 and X^2 (10.800), while % of satisfaction were(64.25%), regarding To what extent do you believe the need for training in the use of telehealth apps and pharmacy informatics is necessary the majority of our participant low were (42.0%) while high were(27.0%)were a significantly associated were P< 0.001 and X^2 (57.360), while % of satisfaction were(53.25%) .

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Table 3. Distribution the beliefs of pharmacy regarding care in the outpatient setting through telemedicine models

Question		Satisfaction				% of agreement	Chi-square	
		Strongly agree	Agree	Disagree	Strongly disagree		X^2	P-value
Telehealth can reduce medical errors.	**N**	135	96	30	39	77.25	98.160	<0.001*
	%	45	32	10	13			
Telehealth can enhance the quality of patient care.	**N**	150	114	21	15	83.25	182.160	<0.001*
	%	50	38	7	5			
Telehealth can facilitate diagnosis and treatment	**N**	75	45	60	120	56.25	42.000	<0.001*
	%	25	15	20	40			
Telehealth can increase communication among health care providers	**N**	111	72	81	36	71.5	38.160	<0.001*
	%	37	24	27	12			
Telehealth can enable pharmacists to accomplish tasks more quickly.	**N**	171	81	30	18	83.75	193.680	<0.001*
	%	57	27	10	6			
Telehealth is convenient and can overcome the inconve- niece of going to a physician or a pharmacist.	**N**	117	138	36	9	80.25	154.800	<0.001*
	%	39	46	12	3			
Telehealth and electronic apps can improve adherence to therapy of patients	**N**	111	87	60	42	72.25	36.720	<0.001*
	%	37	29	20	14			
believe telehealth is compatible with the professional duties of pharmacists.	**N**	123	63	57	57	71	41.280	<0.001*
	%	41	21	19	19			
I think telehealth fits well with the way like to work pharmacists	**N**	147	90	33	30	79.5	122.640	<0.001*
	%	49	30	11	10			
I think telehealth can be implemented work of pharmacists through several devices and digital platforms.	**N**	204	66	21	9	88.75	319.920	<0.001*
	%	68	22	7	3			
I believe using	**N**	210	60	12	18	88.5	342.240	<0.001*

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pharmacist's telehealth requires a lot of mental effort.	**%**	70	20	4	6			
I think telehealth increases pharmacist's workload.	**N**	57	132	57	54	66	57.840	<0.001*
	%	19	44	19	18			
I think pharmacist's telehealth threatens information confidentiality and patient privacy.	**N**	75	57	99	69	61.5	12.480	0.006*
	%	25	19	33	23			

Table (3) shows the satisfaction level about the beliefs of pharmacy regarding care in the outpatient setting through telemedicine models. Regarding the Telehealth can reduce medical errors the majority of our participant Strongly agree were (45.0%) while Agree were(32.0%) while % Of agreement(77.25%) were significantly associated were P< 0.001 and X^2 (98.160). Regarding the Telehealth can enhance the quality of patient care the majority of our participant Strongly agree were (50.0%) while Agree were(38.0%) while % Of agreement(83.25%) were significantly associated were P< 0.001 and X^2 (182.160). Regarding the Telehealth can facilitate diagnosis and treatment the majority of our participant Strongly disagree were (40.0%) while Strongly agree were(25.0%)were a significantly associated were P< 0.001 and X^2 (42.000), while % of satisfaction were(56.25%), regarding The Telehealth can increase communication among health care providers majority of our participant Strongly agree were (37.0%) while Strongly disagree were(12.0%)were a significantly associated were P< 0.001 and X^2 (38.160), while % of satisfaction were(71.5%) . Regarding the Telehealth can enable pharmacists to accomplish tasks more quickly majority of our participant Strongly agree were (57.0%) while Strongly disagree were(6.0%)were a significantly associated were P< 0.001 and X^2 (193.680), while % of satisfaction were(83.75%). Regarding the Telehealth is convenient and can overcome the inconve- niece of going to a physician or a pharmacist majority of our participant agree were (46.0%) while Strongly disagree were(3.0%)were a significantly associated were P< 0.001 and X^2 (154.800), while % of satisfaction were(80.25%), regarding Telehealth and electronic apps can improve adherence to therapy of patients majority of our participant Strongly agree were (37.0%) while agree were(29.0%)were a significantly associated were P< 0.001 and X^2 (36.720), while % of satisfaction were(72.25%) . Regarding believe telehealth is compatible with the professional duties of pharmacists the majority of our participant Strongly agree were (41.0%) while Strongly disagree were(19.0%)were a significantly associated were P< 0.001 and X^2 (41.280), while % of satisfaction were(71.25%), regarding I think telehealth fits well with the way like to work pharmacists majority of our

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participant Strongly agree were (49.0%) while Strongly disagree were(10.0%)were a significantly associated were P< 0.001 and X^2 (122.640), while % of satisfaction were(79.5%) . Regarding I think telehealth can be implemented work of pharmacists through several devices and digital platforms majority of our participant Strongly agree were (68.0%) while Strongly disagree were(3.0%)were a significantly associated were P< 0.001 and X^2 (319.920), while % of satisfaction were(88.75%). regarding I believe using pharmacist's telehealth requires a lot of mental effort majority of our participant Strongly agree were (70.0%) while Strongly disagree were(6.0%)were a significantly associated were P< 0.001 and X^2 (342.240), while % of satisfaction were(88.5%). Regarding I think telehealth increases pharmacist's workload majority of our participant agree were (44.0%) while disagree were(19.0%)were a significantly associated were P< 0.001 and X^2 (57.840), while % of satisfaction were(66.0%), regarding I think pharmacist's telehealth threatens information confidentiality and patient privacy majority of our participant disagree were (33.0%) while Strongly agree were(25.0%)were a significantly associated were P< 0.001 and X^2 (12.480), while % of satisfaction were(61.5%)

Discussion

In this study, aim To Assessment of pharmacists providing care in the out-patient clinics setting through telemedicine models in Makkah Cityin our knowledge, this is the first study that has highlighted the role of pharmacists providing care in the out-patient clinics setting through telemedicine models in Makkah City. The drastic rise in the number of confirmed and suspected COVID-19 patients has led to logistic dilemmas and has burdened hospitals, out-patient clinics and medical equipment supply chains (26). Ensuring the continuity of care and compliance with appropriate dispensing practice has become more complex, which escalates the importance of telehealth as a strategy that could aid in mitigating the interference of COVID-19 in the provision of pharmaceutical services.(27) Even though the conception of telehealth is not novel, transitioning to this method of communication as an alternative to traditional approaches has been scaling up in medical practice settings during the COVID-19 pandemic. This is because telehealth services are thought to be an efficient way for providing remote access to quality healthcare services without increasing the risk of virus transmission, from and to, both healthcare providers and patients (28).

Views of pharmacists regarding the need for coverage of the pharmacists providing care in the outpatient setting through telemedicine models, the Views of pharmacists regarding the need for coverage of the pharmacists providing care in the outpatient setting through telemedicine models the most of the participants views are low regarding What do you think of the current coverage of telehealth and digital health in the Pharm D program, to what extent is training in the use of telehealth necessary for pharmacists, to what extent you are familiar with electronic health and drug

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information apps and databases (eg, Up To Date), to what extent do you believe the need for training in the use of telehealth apps and pharmacy informatics is necessary. (See table 2) the participants in this study showed interest in telehealth. They reported that it was necessary for their education and that it provided knowledge and opportunities to develop their skills, which could encourage pharmacists to use eHealth techniques in the future (29)

Although the pharmacists showed good awareness of digital health apps and positive views regarding the inclusion of digital health technology in their worked, program was low or very low. These findings are similar to those reported by a previous study conducted at the end of 2020 among medical students. (30)

Conclusion

Has identified pharmacists' diverse contributions to patient care and the education of other healthcare professionals and members of public. Key clinical pharmacy contribution areas include direct clinical care of COVID-19 patients; gathering and appraising evidence to inform patients and healthcare professionals; ensuring uninterrupted supply, also revealed the actual implementation and quality of telehealth services provided by the community pharmacists. An unsatisfactory level of preparedness through means of telehealth technology was evident. This caused the quality of pharmaceutical care services provided to high-risk patients via telehealth to be below expectations. Therefore, in light of these findings, healthcare authorities should encourage community pharmacists to adopt telehealth technologies, guide them to gain the necessary skills, and to recognize their extra efforts with financial compensations.These means are crucial to optimize pharmacists' effective engagement in telehealth and improve the overall healthcare outcomes of patients.

References

1. Mohiuddin, S. I., Thorakkattil, S. A., Abushoumi, F., Nemr, H. S., Jabbour, R., & Al-Ghamdi, F. (2021). Implementation of pharmacist-led tele medication management clinic in ambulatory care settings: A patient-centered care model in COVID-19 Era. *Exploratory Research in Clinical and Social Pharmacy*, *4*, 100083.
2. Bali, S. (2018). Enhancing the reach of health care through telemedicine: Status and new possibilities in developing countries. In *Health care delivery and clinical science: Concepts, methodologies, tools, and applications* (pp. 1382-1397). IGI Global.
3. Rout, S. K., Gabhale, Y. R., Dutta, A., Balakrishnan, S., Lala, M. M., Setia, M. S., ... &Manglani, M. V. (2019). Can telemedicine initiative be an effective intervention strategy

for improving treatment compliance for pediatric HIV patients: Evidences on costs and improvement in treatment compliance from Maharashtra, India. *PLoS One*, *14*(10), e0223303.

4. Margusino-Framiñán, L., Cid-Silva, P., Castro-Iglesias, Á., Mena-de-Cea, Á., Rodríguez-Osorio, I., Pernas-Souto, B., ... & Martín-Herranz, I. (2019). Teleconsultation for the pharmaceutical care of HIV outpatients in receipt of home antiretrovirals delivery: Clinical, economic, and patient-perceived quality analysis. *Telemedicine and e-Health*, *25*(5), 399-406.
5. AlQarni, K., AlQarni, E. A., Naqvi, A. A., AlShayban, D. M., Ghori, S. A., Haseeb, A., ... & Jamshed, S. (2019). Assessment of medication adherence in Saudi patients with Type II diabetes mellitus in Khobar City, Saudi Arabia. *Frontiers in pharmacology*, *10*, 1306.
6. Chitungo, I., Mhango, M., Mbunge, E., Dzobo, M., Musuka, G., &Dzinamarira, T. (2021). Utility of telemedicine in sub-Saharan Africa during the COVID-19 pandemic. A rapid review. *Human behavior and emerging technologies*, *3*(5), 843-853.
7. Firnhaber, K., Banoo, S., Mokobori, M., & Strydom, B. (2018). Creating the pharmacies of the future–innovation through the appropriate use of technology. *Africa Journal of Public Sector Development and Governance*, *1*(1), 71-81.
8. Itani, R., Khojah, H. M., Jaffal, F., Rahme, D., Karout, L., &Karout, S. (2021). Provision of pharmaceutical care to suspected high-risk COVID-19 patients through telehealth: a nationwide simulated patient study. *BMC health services research*, *21*(1), 1-10.
9. Verhoeven, V., Tsakitzidis, G., Philips, H., & Van Royen, P. (2020). Impact of the COVID-19 pandemic on the core functions of primary care: will the cure be worse than the disease? A qualitative interview study in Flemish GPs. *BMJ open*, *10*(6), e039674.
10. Dhingra, D., &Dabas, A. (2020). Global strategy on digital health. *Indian pediatrics*, *57*(4), 356-358.
11. Senbekov, M., Saliev, T., Bukeyeva, Z., Almabayeva, A., Zhanaliyeva, M., Aitenova, N., ... &Fakhradiyev, I. (2020). The recent progress and applications of digital technologies in healthcare: a review. *International journal of telemedicine and applications*, *2020*.
12. D'Amario, D., Canonico, F., Rodolico, D., Borovac, J. A., Vergallo, R., Montone, R. A., ... &Crea, F. (2020). Telemedicine, artificial intelligence and humanisation of clinical pathways in heart failure management: back to the future and beyond. *Cardiac Failure Review*, *6*.
13. Phillips, A. (2021). Artificial intelligence-enabled healthcare delivery and digital epidemiological surveillance in the remote treatment of patients during the COVID-19

pandemic. *American Journal of Medical Research*, *8*(1), 40-49.

14. Zarowitz, B. J. (2020). Emerging Pharmacotherapy and Health Care Needs of Patients in the Age of Artificial Intelligence and Digitalization. *Annals of Pharmacotherapy*, *54*(10), 1038-1046.
15. Kane-Gill, S. L., Niznik, J. D., Kellum, J. A., Culley, C. M., Boyce, R. D., Marcum, Z. A., ... & Handler, S. M. (2017). Use of telemedicine to enhance pharmacist services in the nursing facility. *The Consultant Pharmacist®*, *32*(2), 93-98.
16. Mohiuddin, S. I., Thorakkattil, S. A., Abushoumi, F., Nemr, H. S., Jabbour, R., & Al-Ghamdi, F. (2021). Implementation of pharmacist-led tele medication management clinic in ambulatory care settings: A patient-centered care model in COVID-19 Era. *Exploratory Research in Clinical and Social Pharmacy*, *4*, 100083.
17. Yezli, S., & Khan, A. (2020). COVID-19 social distancing in the Kingdom of Saudi Arabia: Bold measures in the face of political, economic, social and religious challenges. *Travel medicine and infectious disease*, *37*, 101692.
18. Alanzi, T. (2021). A review of mobile applications available in the app and google play stores used during the COVID-19 outbreak. *Journal of multidisciplinary healthcare*, *14*, 45.
19. Alsahali, S. (2021). Awareness, Views, Perceptions, and Beliefs of Pharmacy Interns Regarding Digital Health in Saudi Arabia: Cross-sectional Study. *JMIR Medical Education*, *7*(3), e31149.
20. Haleem, A., Javaid, M., Singh, R. P., & Suman, R. (2021). Telemedicine for healthcare: Capabilities, features, barriers, and applications. *Sensors International*, *2*, 100117.
21. Kinninmont, J. (2017). Vision 2030 and Saudi Arabia's social contract. *Austerity and transformation', Chattham House, London*.
22. Hazazi, A., & Wilson, A. (2021). Leveraging electronic health records to improve management of noncommunicable diseases at primary healthcare centres in Saudi Arabia: a qualitative study. *BMC Family Practice*, *22*(1), 1-6.
23. Ahmed, Y. A., Alrashidi, I. M., Aljowyyan, M. H., Alasmari, A. M., AlHarbi, K. F., Saleh, S. S., ... &Faqihi, A. M. The impact of COVID-19 on Digital health and care in Saudi Arabia.
24. Binkheder, S., Aldekhyyel, R. N., AlMogbel, A., Al-Twairesh, N., Alhumaid, N., Aldekhyyel, S. N., & Jamal, A. A. (2021). Public Perceptions around mHealth Applications during COVID-19 Pandemic: A Network and Sentiment Analysis of Tweets in Saudi Arabia. *International Journal of Environmental Research and Public Health*, *18*(24), 13388.
25. Bano, M., Zowghi, D., & Arora, C. (2020). Requirements, politics, or individualism: What

drives the success of covid-19 contact-tracing apps?. *Ieee Software*, *38*(1), 7-12.

26. Abu-Farha, R., Mukattash, T., Itani, R., Karout, S., Khojah, H. M., Al-Mahmood, A. A., &Alzoubi, K. H. (2021). Willingness of Middle Eastern public to receive COVID-19 vaccines. *Saudi pharmaceutical journal*, *29*(7), 734-739.
27. Kong, S. S., Azarfar, A., Ashour, A., Atkins, C., &Bhanusali, N. (2020). Awareness and attitudes towards telemedicine among medical students in the United States. *Cureus*, *12*(11).
28. Bhutta, Z. A., Basnyat, B., Saha, S., & Laxminarayan, R. (2020). Covid-19 risks and response in South Asia. *Bmj*, *368*.
29. Volerman, A., Kan, K., Carpenter, D., & Press, V. G. (2021). Strategies for improving inhalation technique in children: A narrative review. *Patient preference and adherence*, *15*, 665.
30. Whaibeh, E., Mahmoud, H., &Naal, H. (2020). Telemental health in the context of a pandemic: the COVID-19 experience. *Current Treatment Options in Psychiatry*, *7*(2), 198-202.