



COVID-19 PANDEMIC AND IMPACT ON PHARMACEUTICAL SALES REPRESENTATIVES' OPERATIONS IN WEST AFRICA: A SOCIO-DEMOGRAPHIC CASE STUDY OF NIGERIA

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ABSTRACT: *Global economy and economic operations have been devastated due to COVID-19 pandemic. Health personnel, products and services are in higher demand now more than ever. The pharmaceutical supply chain has not been spared by COVID-19 effects, either. Pharmaceutical sales representatives are integral to an effective supply chain for healthcare products and services. Hence, the level of impact on pharmaceutical sales representatives (PSRs) operations' need to be investigated. The study adopted a quantitative research technique. Questionnaires were administered to 226 PSRs across the six (6) geo-political zones in Nigeria, namely-North-Central, North-East, North-West, South-East, South-South and South-West. Purposive sampling technique was used. Data collected was analysed using SPSS version 23. Descriptive and Inferential statistics were used to analyse data. Majority of respondents had knowledge of main COVID-19 symptoms and used social media platforms in their operations. Relationships exist between the type of firm and responses to questions on impacts on staff strength reduction, salary payment, and agreement with government directive on movement restrictions ($p < 0.01$). 60.3% of PSRs' had constant wages and 31.2% had reduced wages as a result of lockdown in Nigeria. Annual income brackets of < US\$5,300 to 6,850 were least impacted by lockdown due to Covid. Study suggests overall low impact of COVID lockdown on operations and income of pharmaceutical sales representatives in Nigeria.*

KEYWORDS: COVID-19, Pandemics, Nigeria, Pharmaceutical Sales Representatives (PSRs), Operations, Income, Supply Chain.

INTRODUCTION

COVID-19 pandemic arguably is one of the most challenging global health concerns in modern history. The entire cost in terms of human lives is yet to unfold.

Apart from lives lost and resultant health crisis, the world is witnessing economic downturn which has adversely impacted on all facets of human existence. The coronavirus disease 2019 is produced by a virus that presently has no established pharmaceutical treatment. The dynamics of the disease are such that in the absence of non-pharmaceutical interventions (NPIs), it overwhelms the capacity of national health care



systems to adequately cater for the aftermath of infections and morbidity. (Ferguson et al 2020: Liu et al 2020: Bao et al 2020) Hence, governments chose to enact NPIs to contain the spread of the COVID-19 pandemic. These are part of the many measures set up by governments worldwide to stem the spread and impact of the pandemic.

COVID-19 pandemic has changed the way organisations function, operate and also impacted on the income and revenue of firms' in general. [Elbedinni & Yeats 2020: Omary et al 2020: Mahler et al 2020: Dingel & Neiman 2020] Hence, this study attempts to assess the knowledge, and economic impact of the pandemic on the operations of the sales work force of pharmaceutical firms in Nigeria. Nigeria, understandably accounts for over 50% of the West Africa population with over three hundred and eighty-one million people comprising 16 countries. [United Nations Department of Economic and Social Affairs, Population Division, 2019] Therefore, Nigeria mirrors the sub-region in terms of economy and critical facets of life. The distribution of medicines is critical to ensuring a healthy population in the midst of the pandemic. However, the supply chain work force has also been impacted by the effects of COVID-19 pandemic. Hence, the need to assess the various social, demographic and economic elements of impact on pharmaceutical sales representatives and its implications to sustainable healthcare delivery is the purpose of this study.

THEORETICAL UNDERPINNINGS

Impact of COVID-19 on the pharmaceutical industry and the economy

The pandemic has had immense impact on all sectors of the economy including the pharmaceutical sales and marketing industry, being a subset of the already overstretched healthcare delivery system. Manufacturing, retailing and wholesale channels for drug supplies are faced with increasing demand for pharmaceutical products and services due to the impact of COVID-19. [Dorthum & Gustafsson, 2020] In Nigeria, the distribution of medicines as well as the supply chain of medicines to the final consumer, has been largely affected as well, primarily because Nigeria is largely dependent on foreign countries for active pharmaceutical ingredients and finished pharmaceutical products. [Akandi-Sholabi & Adebisi, 2020] COVID-19 has impacted largely on the use of technology to enhance virtual meetings and enable remote working and other online platforms. These are as a result of lockdown and social distancing measures. [Omary et al 2020: Dingel & Neiman 2020] Several implications abound as a result of COVID-19 on the economy; namely reduced productivity and labour supply; business liquidation due to lockdown measures coupled with income loss due to layoffs. A study identified global economic uncertainty and crisis due to loss of capital and investment exits, as the crisis continues to spread as a result of the pandemic. Other causative factors include; restrictions of travel, quarantine regulations, downturn in global economy, decreased local production and unfavourable exchange rates. [Ibn-Mohammed et al 2020: Chudik et al 2020: Kalu 2020] In Nigeria, the federal government declared a nationwide lockdown which lasted from March, 2020 and eased in August, 2020 (approximately five months). [Aladejebi 2020] This action by the government as expected impacted on the socio-economic fabric of the country.



Aim of the Study

Objectives of the study were; firstly, assess the basic knowledge of respondents of major COVID-19 symptoms. Secondly, ascertain how the pandemic impacted on the pharmaceutical sales representatives' operations. Finally, ascertain whether COVID-19 pandemic affected wage/earnings of the respondents.

Hypothesis of the study

The study hypothesis were stated in the null form (H_0) as follows:

1. There is no change in PSRs' wages/earnings due to the impact of COVID-19 lockdown in Nigeria
2. There is no relationship between socio-demographic characteristics of respondents and their perception of COVID-19 lockdown impact on operations.
3. The type of firm of PSRs did not affect income/wages of PSRs' during the lockdown period in Nigeria.

METHODOLOGY

Study Area/Setting

The research was conducted in Nigeria. Nigeria features a population of over 200 million residents and 36 states divided into 6 geopolitical zones namely: North-Central (Benue, Kogi, Kwara, Nassarawa, Niger, Plateau and Federal Capital Territory), North-East (Adamawa, Bauchi, Borno, Gombe, Taraba and Yobe), North-West (Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto and Zamfara), South-East (Abia, Anambra, Ebonyi, Enugu and Imo), South-South (Akwa Ibom, Bayelsa, Cross River, Delta, Edo and Rivers) and South-West (Ekiti, Lagos, Ogun, Ondo, Osun, and Oyo).

Sample and Sampling Techniques

The study used a cross-sectional survey research design, which involved the administration of validated close-ended questionnaires to two hundred and twenty-six (226) pharmaceutical sales representatives (PSRs) located across the 6 geopolitical zones in Nigeria. The geopolitical zones were used because in practice PSRs cover more than 1 or more states per territory. Respondents were purposively selected since the inclusion criteria were that the respondents must be sales and marketing personnel actively involved in pharmaceutical sales in Nigeria and provided oral consent. Purposive sampling was also used because of the absence of a reliable PSR data base in Nigeria.

Data Analytical Techniques

Data was collected and analysed using Microsoft excel and SPSS 23. Descriptive statistics such as mean, median and frequencies were used to characterize the demographic and perception data of PSRs. Inferential statistics such as Analysis of Variance (ANOVA), were used for categorical and scale data. The significant level was determined when the *p-value* is less or higher than 0.05.



RESULTS/FINDINGS

Socio-Demographics of the Respondents

Table 1 provides a summary of key demographic characteristics of respondents. A total of 226 pharmacy sales representatives from diverse geographical regions representing different pharmaceutical firms participated in this research. The majority (113 participants), cover territories in South-West, 41 from North-West, 17 from South-East, 26 from South-South, 20 from North-Central and the least number of participants (8) cover North-East. For the age range, the majority (102 participants) were between 31 and 35 years old. This probably implies that participants are within their active age. While the least range of the participants' ages was between 21 and 25 years. In terms of years of experience in pharmaceutical sales and marketing, less than 5 years were 119, 91 were within 6-10 years, 14 were less than 20 years and 1 had greater than 21 years' experience. B.Sc./HND was the highest qualification attained by the majority (168) of the participants. The Indigenous pharmaceutical firm was most featured with approximately 160 participants followed by Multinational (59 participants), while the freelance firm had 6 participants. The majority (162) of the participants earned at least USD\$5,300 annually, 42 participants earned between USD\$ 5,350 and 6,850, 12 between USD\$6,900 to 8,450 and 9 earned above USD\$8,450 per annum.

Knowledge of the Symptoms of COVID-19

On the major symptoms of COVID-19, 95% of the respondents agreed that fever was a major symptom of COVID-19, 89% agreed that it was Dry Cough, 75% were of the opinion that Sneezing as a major Symptoms, 62% agreed that it was Fatigue while 88% of the respondents agreed that it's Shortness of breath. (**Figure 1**)

Preference of PSRs' to Social Media during lockdown period in Nigeria

To further ascertain the impact of COVID-19 on the pharmaceutical sales representatives' operation, the respondents were asked to rank their preference levels regarding the usefulness they got from the social media to alleviate the impact of COVID-19 on their operations. The most preferred social media as shown in **Figure 2**, were WhatsApp with 82.1%, followed by Facebook (59.2%), Twitter (47.1%), Instagram (32.7%), LinkedIn (22.4%) and Snapchat (2.2%) being the least preferred social media.

Impact of COVID-19 lockdown on PSRs Wages/earnings

Figure 3 shows that the majority (131) of the participants had constant wages/earnings, 71 of the respondents had reduced wages/earnings, while 10 of the respondents' wages/earnings increased significantly. 3 respondents had their firms closed for business permanently. Also, 3 were not paid and had salaries subsidized by the government while just one was not paid and spent savings and obtained help from acquaintances. 3 of them witnessed the closure of business temporarily and were not paid by the government and that government subsidised their payments respectively.

Impact of COVID-19 pandemic on operations and work functions of PSRs in Nigeria

Table 2 shows the respondents' perception about their firm's response to COVID-19. 128 of the respondents indicated that they had reduced sales/work, 174 revealed that their company did not reduce their staff strength, 170 shows that their salaries were paid in full, 181 of the



participants are willing to continue in the business over the next year, 127 of the respondents agreed that they would make operational changes to how the business is been run/ managed, this may include the use of electronic media, work from home, use of face masks, hand sanitisation, etc. Furthermore, 130 participants agreed with the government lockdown policy during the pandemic, while 166 participants felt that the government has not done enough to curtail COVID-19 pandemic in Nigeria.

DISCUSSION

It is common knowledge that the global scourge of COVID-19 carries with it negative economic and social implications. [Ozili & Anum: Gray et al 2020] The healthcare industry is not spared in this regard. This invariably implies that the operations of pharmaceutical sales representatives (PSRs) is also affected. The results of this study reflect the impact of the pandemic on pharmaceutical sales representative operations in Nigeria. The population was well distributed across the six geopolitical zones in Nigeria despite challenges with access to a larger size due to unavailability of databases. Hence, the use of purposive sampling technique. The survey also cuts across a wide range of pharmaceutical firms in Nigeria categorised as Indigenous, Multinational and Freelance firms.

PSRs adopted the use of social media platforms such as WhatsApp, LinkedIn, Snapchat, extensively during the period of the lockdown as a medium of communication and interaction with healthcare practitioners and trade customers. [Dorthum & Gustafsson 2020]

In this study, the various aspects of impact of COVID-19 on operations of PSRs were analysed within the context of specific socio-demographic variables as shown in **Table 2**. These variables are; territory of coverage, type of firm and years of experience. Findings revealed significant responses from respondents based type of firm compared to territory of coverage and years of experience. The findings were 77.1% respondents did not confirm staff strength reduction as an impact of COVID-19 lockdown, Also, 76.5% respondents confirmed full salary payment within the lockdown period. In the same vein, 57.9% of respondents tended to agree with restriction of movement as directed by the federal government of Nigeria. Apparently, the response of PSRs' to the question of impact of sales and business, revealed no significant impact on the volume of sales achieved within the period of lockdown. The study also agrees with the findings of Aladejebi (2020) that most of the respondents agreed to continue in their line of business in the next year and mostly disagreed with closing their business or stopping operations as a result of the Pandemic. Albeit that the pharmaceutical industry as a whole has faced disruptions in the supply chain of commodities, medical devices and medicines. In addition to limited movements due to social distancing that has negatively impacted the global economy. [Chudik et al 2020: Aladejebi, 2020: Ozili & Anun 2020]

Covid-19 has changed the paradigm as far as work operations is concerned globally; the use of technology as an instrument of trade and transaction has strengthened or grown exponentially within a very short span of time. This is due to the need to reduce physical interaction as much as possible. [Borton et al 2011] In this study, the majority of respondents concurred with the use of virtual interface to communicate with clients. In pharmaceutical sales and marketing, this is rapidly becoming the norm or practice as interaction with healthcare practitioners (HCPs), has tended to be less physical prior to covid-19. [Borton et al 2011] In the same vein,



the findings of this study draws similarity to another study on the impact of COVID-19 that showed that over one-third of jobs in the United States of America can be done from home. [Dingel & Neiman 2020] This significantly raises questions on the impact on workforce hire and employment in low-and-medium income countries (LMICs) in Africa. As earlier mentioned, this study showed that perceptions differ across demographic lines; from the analysis, it is seen that the type of pharmaceutical company or firm involved, plays a determinant role on PSRs' perception of the impact of COVID-19 in Nigeria. It is shown from this study that all firms had similar response patterns to the impact of Covid on their operations. However, it is advocated by a study which highlighted the need for businesses to pre-emptively plan to ensure continuity of business during a pandemic. By investing in preventive measures and assets. [Ozili & Anum 2020; Rehmann et al 2013] Other similarly affected areas were; perceptions concerning staff salary payment and agreement with government's policy on restriction of interstate travel during the period of lockdown.

In this study, the impact of COVID-19 lockdown on Wages was quantitatively analysed. From **Table 4 and 5**, the impact of COVID on wages is significantly attributable to PSRs within the salary bracket of less than USD\$ 5,300 to 8,450 per annum. This level of significance is most likely due to the fact that most respondents (90.3%) are from this wage category and level of experience. There was negligible negative effect on wages. The apparent stability in wages is not unconnected to the increased demand for healthcare products during the period of COVID where health consciousness is at all-time high.

IMPLICATIONS TO RESEARCH AND PRACTICE

There are implications to practice from this study; it provides practitioners with useful information on the paradigm shifts in traditional person to person mode of information sharing dissemination and interactions with clients (direct consumers) and healthcare practitioners, to the use of technology and less personal approaches. It raises the question of workforce employment because technology is rapidly closing the requirement gaps for persons. Another succinct implication is that the need/demand for medicines and medical devices has sharply risen. This has largely helped the pharmaceutical industry globally, particularly in Nigeria as revealed by the findings of this study. Hence, the improved ability of most pharmaceutical firms to sustain wage payments and contain disengagement of staff. However, this does not imply that the pharmaceutical sales and marketing industry is immune to the negative impact of the pandemic on the production value chain, transportation and largely impaired purchasing power of citizens due to the negative impact of the economy. Furthermore, the role of socio-demographic characteristics of PSRs is an essential attribute to consider in understanding the degree of impact of COVID-19 as shown in the results of this study. The strength of this study is that it is the first to address the impact of COVID-19 on a sector of the pharmaceutical distribution system; involving pharmaceutical sales representatives. This is because healthcare personnel from different spheres of practice have been the most affected in terms of exposure to Covid, hence it is relevant to study how it impacts on those in the pharmaceutical sales and marketing Industry.



CONCLUSION

The study showed that the wages or earnings of PSRs did not change during the period of COVID-19 lockdown. However, the study showed an adaptation of the mode of operations to be more technology driven. Study concluded that COVID-19 pandemic generally had low impact on the Pharmaceutical Sales Representatives' (PSRs) operations and earnings in Nigeria.

Further Research

There is a need to further research on the impact of COVID-19 on multiple sectors of the economy apart from the health sector. Also, there is room for more impact analysis studies in other aspects of the health system.

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APPENDIX

FIGURES

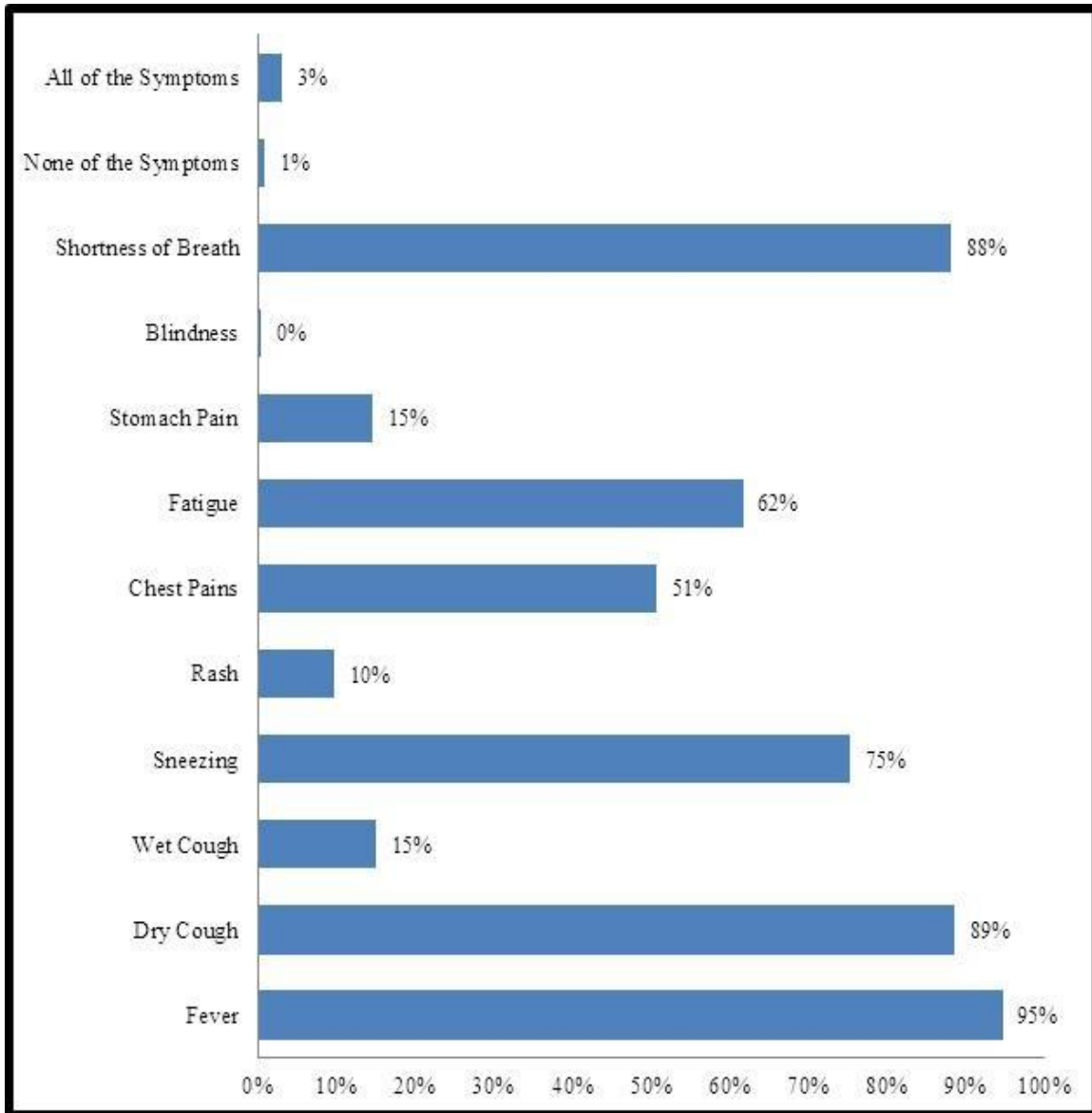


Figure 1: Respondents' knowledge of Major COVID-19 symptoms

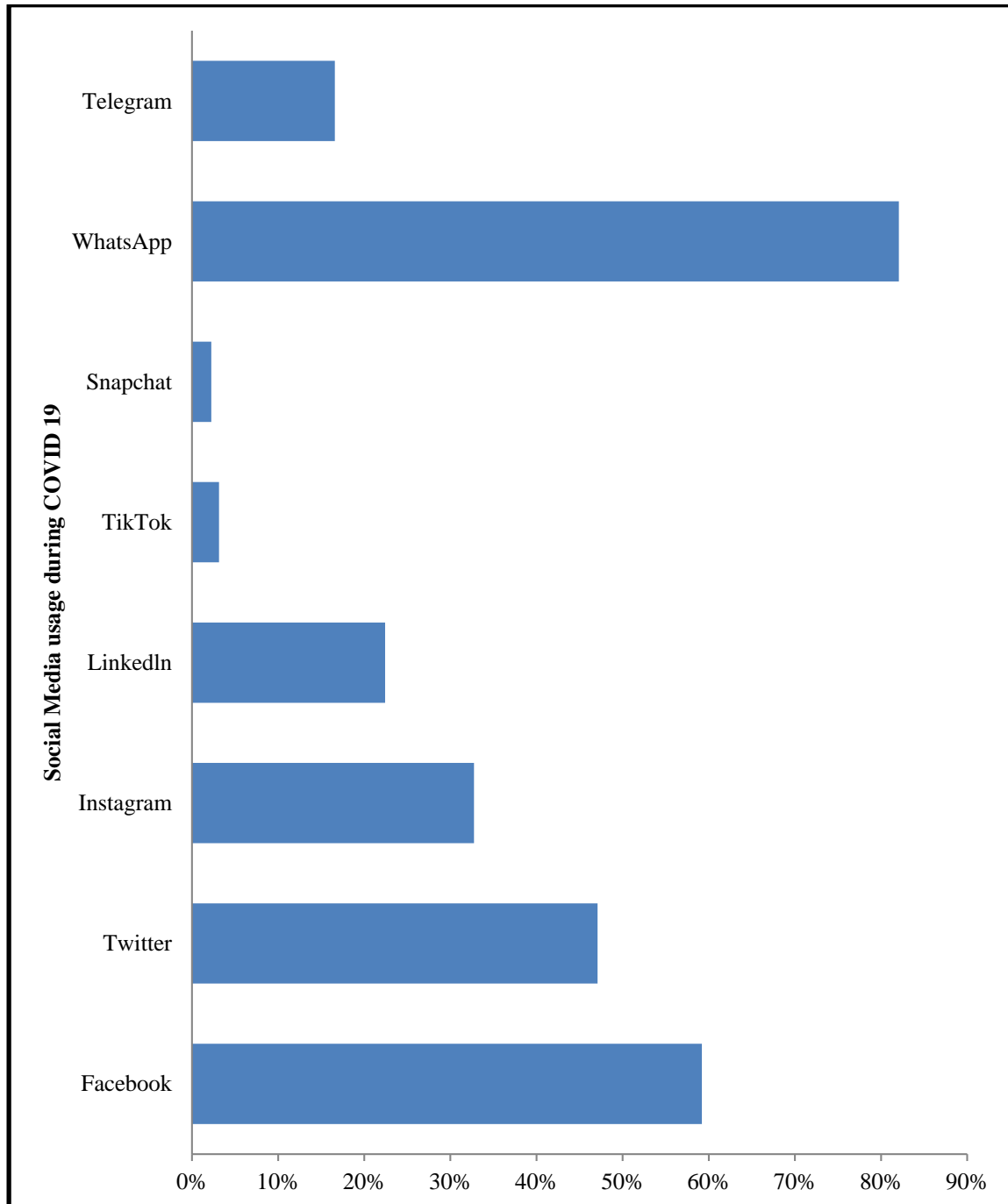


Figure 2: Usefulness of Social media on the operations of respondents during the COVID-19 lockdown

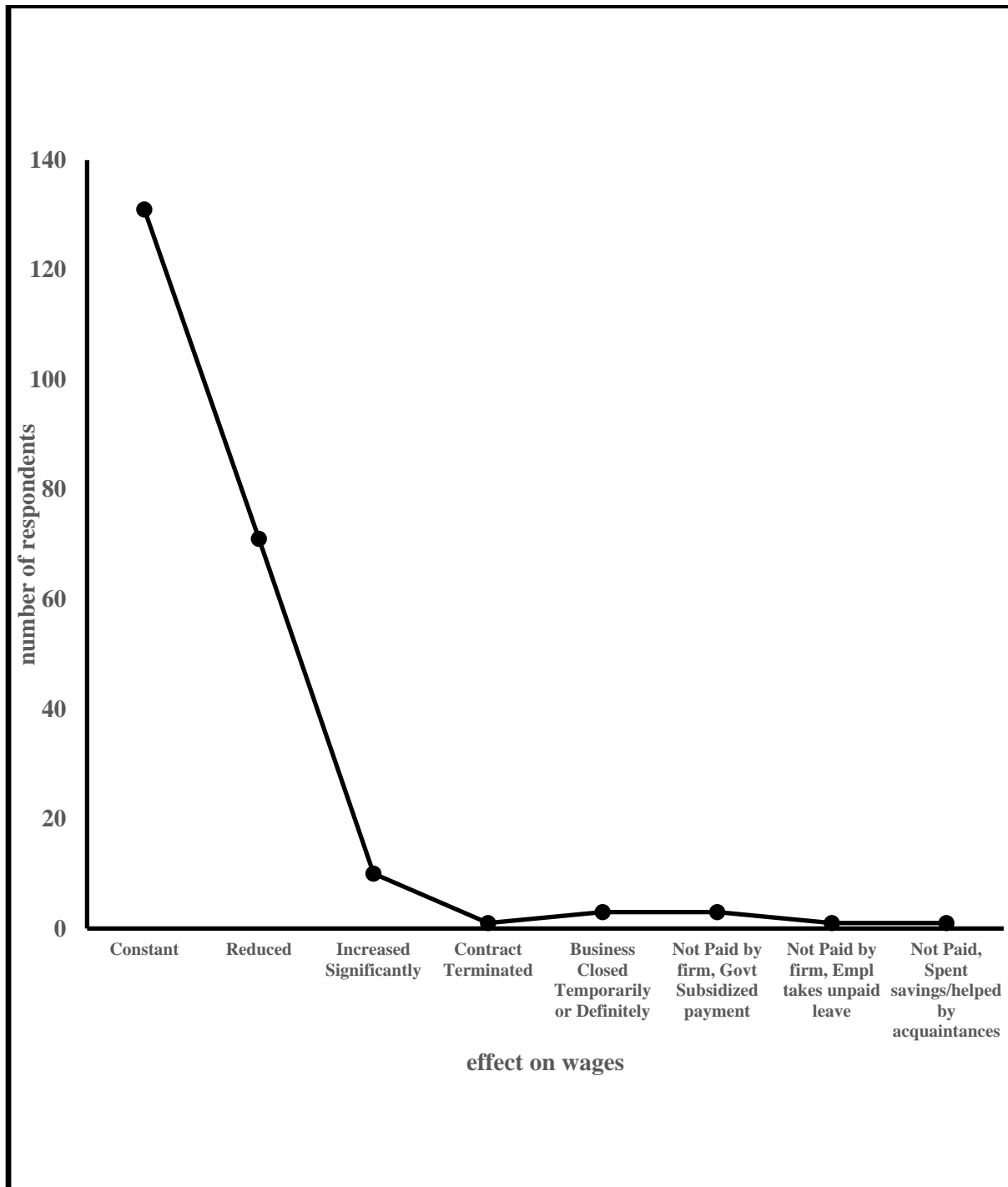


Figure 3: Impact of COVID-19 on PSRs' Wages



TABLES

Table 1: Summary of Key Demographic Variables			
Income/Demographic Variables		N	Marginal Percentage
Effect of COVID lockdown on Wage/earnings	Constant	131	60.1%
	Reduced	71	31.2%
	Increased Significantly	10	4.6%
	Contract Terminated	1	0.5%
	Business Closed Temporarily or Definitely	3	1.4%
	Not Paid by firm, Government Subsidized payment	3	1.4%
	Not Paid by firm, Employee takes unpaid leave	1	0.5%
	Not Paid, Spent my savings/helped acquaintances by	1	0.5%
Territory of Coverage	North-Central	20	8.7%
	North-East	8	3.7%
	North-West	41	18.3%
	South-East	17	7.3%
	South-South	26	11.9%
	South-West	113	50.0%
Years of Pharmaceutical sales and marketing experience	< 5	119	51.8%
	6-10	91	41.3%
	11-15	14	6.4%
	> 21	1	0.5%
Type of Firm	Indigenous	160	71.1%
	Multinational	59	26.6%
	Freelance	6	2.3%
Sales Rep Annual Salary	< USD\$ 5,300	162	71.1%
	\$5,350 TO 6,850	42	19.3%
	\$6,900 to 8,450	12	5.5%
	> 8,450	9	4.1%

**Table 2: Evaluation of COVID-19 Impact on operations of PSRs based on Socio-demographic variables**

Impact statements on Operations and Policy	Mean SD	Number N (%)			Socio-demographic factors (ANOVA) p-values		
		Yes	Undecided	No	Territory	type of firm	years of experience
Has your company experienced overall drops in sales, sales activities, marketing activations and business due to COVID-19 outbreak	1.50±0.64	128 (57.4)	17 (7.6)	78 (35.0)	0.808	0.244	0.685
Has your company reduced the staff strength as a result of Covid-19	1.10±0.47	37 (16.6)	14 (6.3)	172 (77.1)	0.46	*0.001	0.641
Were you paid complete salaries during the lockdown?	1.74±0.50	169 (76.5)	6 (2.7)	46 (20.8)	0.563	*0.0001	0.706
Do you expect to continue in Pharmaceutical selling over the next year	1.70±0.67	182 (81.3)	26 (11.6)	16 (7.1)	0.446	0.604	0.544
Do you plan to change your model of operations e.g. use of online platforms electronic/digital strategies, work from home, work rotation	1.45±0.71	127 (57.2)	28(12.6)	67 (30.2)	0.704	0.4	0.903
Are you in agreement with the government on lockdown and restriction of Interstate movement	1.48±0.66	129 (57.9)	21 (9.4)	73 (32.7)	0.061	*0.017	0.718
Do you think the government has done enough to curtail COVID spread	1.12±0.48	40 (18.2)	14 (6.4)	166(75.5)	0.338	0.776	0.26
*p<0.05, null hypothesis rejected. Post Hoc Tukey HSD valid for all subsets							

**Table 3: Posthoc Analysis**

TUKEY HSD		Mean Difference (I-J)	Std. Error	*Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Indigenous	Multinational	-.179*	.072	.037	-.35	-.01
	Freelance	.885*	.195	.000	.42	1.35
Multinational	Indigenous	.179*	.072	.037	.01	.35
	Freelance	1.063*	.201	.000	.59	1.54
Freelance	Indigenous	-.885*	.195	.000	-1.35	-.42
	Multinational	-1.063*	.201	.000	-1.54	-.59

*Significant values show relationship across all categories of firms

Table 4: Impact of COVID-19 lockdown on Wages as a function of Annual Salaries of PSRs

PSRs' Annual Salary	Sales Rep Annual Salary	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
< USD\$5,300	5,350-6,850	-.538*	.181	0.017	-1.01	-.07
	6,900- 8,450	-.157	.312	.958	-.97	.65
	> 8,450	.398	.357	.681	-.53	1.32
\$5,350-6,850	< 5,300	.538*	.181	0.017	.07	1.01
	6,900 – 8,450	.381	.341	.680	-.50	1.26
	>8,450	.937	.383	.072	-.05	1.93
\$6,900-8,450	< 5,300	.157	.312	.958	-.65	.97
	5,550- 6,850	-.381	.341	.680	-1.26	.50
	> 8,450	.556	.460	.622	-.63	1.75
>8,450	< 5,300	-.398	.357	.681	-1.32	.53
	5,550- 6,850	-.937	.383	.072	-1.93	.05
	6,900-8,450	-.556	.460	.622	-1.75	.63

*. The mean difference is significant at the 0.05 level. $F(3, 216) = 3.651, p = 0.013$ (Multiple Comparisons based on ANOVA Output)

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