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RESEARCH ARTICLE

The Role of Token Economy Therapy in Reducing the Psychological Burden of Formal Caregivers

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Abstract:

Background:

The responsibilities of providing care and support for individuals suffering from any form of illness sometimes impose psychological burdens of the care providers.

Objective:

The major concern of this study was to examine whether token economy therapy (TET) can effectively reduce the psychological burden of formal caregivers in Ibadan, Nigeria.

Methods:

A quasi-experimental design was adopted. Two secondary health centres in Ibadan were purposively selected, while paid caregivers were randomized into intervention (15) and control (15) groups. Two hypotheses were formulated and tested at a 0.05 significance level using Analysis of Covariance as a statistical analysis.

Results:

Findings revealed that the main effect of treatment was significant on the psychological burden (F (1, 29) = 725.492, partial; $\tilde{\eta}^2$ = 0.962). Furthermore, participants in the TET group had a post-treatment mean score of (χ=70.410) and those in the control group had (χ=31.335).

Conclusion:

The study concludes that TET was effective in reducing the psychological burden among health caregivers in state hospitals in Ibadan and was recommended as a treatment modality to reduce psychological burden.

Keywords: Formal caregivers, Psychological burden, Token economy therapy, Sickle cell disease, Treatment, Health caregivers.

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1. INTRODUCTION

The role of providing care and support for individuals who may be suffering from any form of illness – whether by formal (professional privately or publicly paid health service providers) or informal caregivers (children, family relatives, spouses, friends) – can be challenging [1]. These responsibilities sometimes impose both objective burdens (excess workload) and subjective burdens (attitude, psychological and emotional reactions) on the care providers [2]. It was asserted that the well-being and quality of life of these caregivers are often threatened because of frequent anxiety, embarrassment, depression, fatigue, stress, and exhaustion. While some individuals provide this service for their loved ones or relatives (family/informal caregivers), others do it for pay (formal caregivers) [2]. Hence, caregiving remains one of the major public health concerns [3]. Unfortunately, formal caregivers, such as physicians, nurses, social workers, counselors, rehabilitation specialists, and personal support workers, have generally been overlooked in research endeavours [4] in developed and developing countries, such as

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Nigeria [5]. Therefore, issues around family/primary or informal caregivers are always at the forefront of literature [6, 7].

The challenge might be because of public prejudice that these formal caregivers are paid for their services. Formal caregivers who render direct services for the sufferers are equally psychologically distressed and burdened, according to the studies conducted by Silva *et al.* [2]. If the well-being of the formal care providers, which is fundamental to the health care system's effective functioning, continues to be overlooked, the outcome may be disastrous, not only to the sufferers but also to society. Psychological burdens commonly associated with formal caregivers include irregular payment of salaries or wages, long hours of work, patients with negative emotions, the fear of becoming infected and contaminating their relatives, discrimination among health workers, physical fatigue, lack of personal protective equipment, role confusion, and sleep disturbances [8 - 10]. Given these challenges, the likelihood of formal caregivers being under internalized pressure which can trigger mental health problems, may be high with associated consequences, such as compromised health services or lower quality of health service [11 - 14].

Considering the psychological threat and stress exposure resulting from providing care for sufferers, the psychological burden of formal caregivers is highly probable, even though they are paid for the services they are rendering. Similarly, compared with informal caregivers, the psychosocial needs of healthcare providers have not gained much research attention. If the psychological burden of formal caregivers or health professional workers is of the same magnitude as family caregivers, then why have formal caregivers gained less attention among researchers? Therefore, how formal care providers of the sufferers could be helped to attain psychological wellness is of great concern in this study. Although several job-related interventions have been employed to manage stress and the psychological well-being of health workers, especially nurses – for example, the Stress Management and Innovation Promotion Program [15], Stress management intervention [16], Cognitive skills training, relaxation [17], Participative Intervention [18], the social support intervention [19], Interactive, computerized CBT program Grime [20] the token economy has not been employed in reducing the psychological burden of formal caregivers. Can token economy therapy (TET) help to reduce the psychological burden of formal caregivers working in government hospitals in Ibadan? This study attempts to provide an answer to this question.

The token economy is one of the psychosocial, behavioral therapies postulated by [21] with the aim of reinforcing positive behavior in people or groups of people who might be experiencing similar unpleasant conditions so that they may exhibit appropriate expected behavior. According to [22], the token economy utilizes an organism stimulus approach, which includes presenting gift items, offering financial support, and expressing warmth and affection as tokens to foster behavioral changes. Token economy has its roots in the principle of operant conditioning, as propounded by [23], namely, the development of an association between the organism and the environmental contingencies to nurture the desired outcome [24]. According to Skinner, tokens can be used to reinforce and strengthen good behaviors positively; thus, this process is referred to as operant conditioning, which means activating desirable behavior within an environment [23]. Going forwards [25], emphasized the important uses of gift items as a therapeutic treatment for exchanging a bad or negative behavior for more positive or good behavior; hence, they called it the token economy. Apart from gift items, appreciating the services received, such as "thank you very much," "you are such a wonderful health worker," or "I really enjoyed your service," just to mention a few, also serve as token or reinforcement for the formal care provider. The token economy has found its way into the educational system as well. It has been adopted as a learning theory that explains how a range of behaviors is acquired and learned. Thus, the token economy can be effective, not only within education framing but also in the world of work.

2. PREVIOUS STUDIES REVIEWED

Although there is a lack of research evidence on the effectiveness of TET on the psychological burden on formal caregivers, an effort is made in this study to review the little available research evidence on the effectiveness of the token economy. Past studies have shown that the token economy can be effective in managing various forms of unwanted behavior among individuals, especially in classroom settings. For instance [26], investigated the effectiveness of the token economy in reducing disruptive behavior among school-going adolescents. Seven participants who exhibited disruptive behavior were purposively selected for the study. The findings of the study revealed that the token economy effectively decreased destructive behavior among school-going adolescents. The authors of the study criticised the outcome of the study on the grounds that the sample size of seven was small, stating that school adolescents form a large population; hence, the generalization of the outcome may not be accepted [27]. adopted the token economy as an intervention to improve the social and academic behavior of children with behavioral disabilities. The treatment lasted four sessions. The outcome established that the token economy improved the social and academic behavior of the participants. However, just like the early study, the sample size in this study was relatively small. Children with special needs were the participants; therefore, the study lacked generalization.

Apart from classroom settings, the token economy has also been effectively used to treat pathological and mental health-related illnesses [28 - 29] adopted token economy to manage individuals diagnosed with schizophrenia. Being a meta-analysis study, a total of 13 controlled trial studies were reviewed to justify the effectiveness of the token economy. The result of the reviews indicated that most of the studies lacked appropriate methodology, thereby limiting the generalization of the study. For example, no studies individually randomized participants into treatment groups, and none specified medications to most participants exposed to the token economy. Thus, it suggests that more studies are needed to establish the effectiveness of the token economy as an intervention for managing psychosocial issues. Hence, these

methodological flaws were avoided in this current study. Recently, a longitudinal study was conducted [28] at the Central Institute of Psychiatry to ascertain the effectiveness of the token economy among 15 purposively sampled patients with negative symptoms of chronic schizophrenia. The study found that the token economy significantly improved the subjective well-being and socio-adaptive functioning of the study participants. Although the token economy had a positive effect, the study design did not include a control group; all participants were male, and the sample lacked randomization.

Other studies [30, 31] found the token economy to be capable of fostering positive behavior and initiating anticipated change in people, notwithstanding their physical, emotional, and general well-being. Importantly, in a meta-analysis study [31], the study showed that the token economy had significant potential to improve general social well-being. The study concluded that research in behavioral settings could be advanced through the continuous adoption of the token economy as a socio-cognitive treatment modality [32, 33] allude that the token economy can also benefit adults with psychiatric diagnoses, employees, legal offenders, and teachers. Given the above research evidence examples, it could be proven that the token economy can effectively help reduce psychological burdens experienced by formal caregivers. Therefore, the application of token economy therapy on the psychological burden of formal caregivers in government-owned hospitals becomes imperative.

2.1. Aim

The major concern of this study was to examine whether token economy therapy can effectively reduce the psychological burden of formal caregivers in Ibadan, Nigeria. To address this concern, the study specifically aimed to ascertain whether TET can be helpful in reducing the psychological burden of formal caregivers.

2.2. Hypothesis

Considering previous findings of success in mood and behavior modification from token reinforcement, we hypothesized that TET would show a significant effect in reducing the psychological burden of formal caregivers.

3. METHODOLOGY

3.1. Design and Participants

The cause-and-effects research design, which compared the pre-test, post-test and control group scores, was adopted, while the quantitative approach was explored for data collection and analysis. Of 18 general hospitals in Oyo-Sate, Nigeria, two were randomly selected for this study – Adeoyo State Hospital Yemetu, Ibadan and the General Hospital, Oyo. The research design of this study observed a randomization procedure to assign the participants to treatment (15 = Token Economy Therapy) and control (15 = placebo) groups using the Caregiver Burden Inventory (CBI) by Novak and Guest [34]. A total of 30 professional health workers who are referred to as formal caregivers in this study participated in the study.

3.2. Procedure

The researchers obtained ethical clearance and permission from the Social Science and Humanities Research Ethics Committee (SSHRC), the University of Ibadan, and the State Ministry of Health. They were introduced to the chief medical directors of the two selected hospitals. The research lasted four weeks for those who were exposed to TET. Light refreshments were provided to sustain the interest of the participants throughout the training period. However, the same pre-test and post-test instruments were administered to the two groups.

3.3. Criteria of Inclusion

To be part of this study, the individual had to:

- Sign the consent form and agree to participate.
- Be health workers with pay.
- Be either male or female.
- Be able to speak and write English.
- Score below 25 on the Caregiver Burden Inventory.

3.4. Instrument

3.4.1. Psychological Burden Scale

To measure the psychological burden in this study, the psychological burden scale [35] was adopted. The scale measures the emotional expectations of workers, such as anxiety, depression, and uneasiness in relation to their work and safety, which are often affected by work conditions and workload. The 26-item scale comprises a 4 Likert response format ranging from Strongly Agree (4) to Strongly Disagreed (1). The reliability coefficient recorded 0.83 in Cronbach alpha. This instrument was used to collect both pre- and post-scores for the study. An example of the comments is: "My motivation for the job is not enough; I switch to alcohol when I feel burdened emotionally, and I have not had enough sleep in the last week due to job demand."

3.4.2. Caregiver Burden Inventory

The Caregiver Burden Inventory [34] was adopted to screen participants for the study. It is a 24-item multidimensional scale that focuses on the levels of burden experienced by caregivers. The scale response format ranges from Strongly Agree (4) and Nearly Always to Never (1). A high score is between 64-96 and indicates a high level of burden. Moderate scores are between 32 -61, while the lowest scores are between 1 and 31. Hence, those who scored between 64 and 96 were recruited to participate in the study. The reliability value of 0.78 using Cronbach's alpha coefficient was established.

3.5. Intervention Group

3.5.1. Token Economy Therapy Group (TET)

Week One: General orientation and administration of instrument to obtain pre-test scores.

Week Two: Facts about psychological burdens, such as anxiety, depression, and restlessness because of job demand.

Table 1. Summary T-test of paired sample pre-test and post-test psychological burden scores of participants exposed to token economy therapy.

Test	N	Mean	Std. Deviation	t	Sig. (2-tailed)
Pre-test	30	53.57	17.16	17.4	0
Post-test	30	36.17	20.24	-	-

Note: P value is significant at 0.05 levels.

Table 2. Estimated marginal means differences in the treatment and control groups.

Treatment	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Control group	70.41	1.01	68.43	72.34
Token economy	31.34	.80	29.74	32.93

Table 3. Summary of ANCOVA of the test of the interaction effect of treatments and gender on the psychological burden

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	11427.210[a]	3	1350.44	11.46	0.000	-
Intercept	118501.525	1	11901.53	442.31	0.000	-
Treatment	244.845	1	112.423	625.49	0.008	0.862
Error	11799.724	14	118.513	-	-	-
Total	140092.000	30	-	-	-	-
Corrected Total	23226.933	29	-	-	-	-

Note:*P value is significant at 0.05 levels;* R Squared =. 392 (Adjusted R Squared = .345)

Week Three: Selection of the token or medium of exchange, selection of backup reinforcer and specification of the contingencies and exchange ratio.

Week Four: Revision of all activities in the previous sessions and administration of instrument for post-test measures.

3.6. Control Group

Participants in this group were not exposed to any intervention but were observed for the same period of four weeks during their normal working hours. The pre-test data were collected, and at the end of the session, post-test data were also gathered.

3.7. Ethical Issues

All ethical protocols were duly observed. Also, ethical clearance was obtained from the Social Science and Humanities Research Ethics Committee (SSHREC) (UI/SSHREC/2019/0001) and from the Ministry of Health through the Department of Planning, Research and Division. No participant was forced, and any participant who wished to withdraw at any point during the program was free to do so without any penalty. Copies of the ethical clearance were presented to the authorities of each of the two hospitals. Based on the international ethics of research, the authors assured the participants that the confidentiality of the information provided was guaranteed. The participants were equally assured that the information gathered would be used for research purposes only.

3.8. Statistical Method

Being a quantitative study, data were gathered and analyzed using an independent analysis (t-test) and an Analysis of Covariance (ANCOVA) at a level of 0.05 significance to determine the effectiveness of the training on the dependent variable (Token Economy Therapy). The degrees of the mean scores of the participants in the intervention and control groups were ascertained by Fishers' LSD post-hoc analysis.

4. RESULTS

The intention of the research hypothesis was to discover whether TET was effective on the psychological burden of formal caregivers. The finding in Table **1** shows the significant main effect of the intervention of psychological burden. The independent t-test of pre-tests of psychological burdens shown in Table **1** indicated a 53.57 (53.57%) mean score, and after treatment, the post-test mean score was reduced to 36.17 (36.17%). By implication, there was a significant decrease in the psychological burden on formal caregivers after the intervention. Thus, TET was effective in reducing the psychological burden among formal caregivers in Ibadan. Furthermore, the result in Table **2** revealed the mean and standard error in psychological burden scores of formal caregivers exposed to TET and those in the control group. The participants in the TET (Mean = 31. 34; SE = .80) achieved more than those in the control group (Mean = 70.41; SE = 1.01) who were not trained. This result implies that since the mean score of participants in the TET program was lower compared with those in the control group who were engaged in their normal daily work activities, participants in the intervention group benefited more than those who were not exposed to any intervention (Table **3**).

5. DISCUSSION

5.1. Discussion of Hypothesis one on the Effectiveness of Token Economy Therapy on the Psychological Burden of Formal Caregivers

In discussing the first outcome of the study, which hypothesized that the TET treatment would significantly reduce the psychological burden of formal caregivers, the hypothesis was supported. This finding established that when formal caregivers are exposed to TET, their psychological burden will possibly reduce, and they can become psychologically well enough to perform their job roles as health workers. This outcome could be ascribed to the fact that everyone needs some degree of motivation to perform well. This is what TET is all about – to be psychologically well. TET also reinforces positive behavior in an individual who may be experiencing an unpleasant psychological condition and exhibiting inappropriate behavior. As observed by the authors, formal caregivers are constantly exposed to health-related psychological burdens, including inadequate remuneration and hazard allowances, the fear of becoming infected, excess workload, and physical fatigue, which require urgent psychological intervention since their psychological well-being is critically germane to the effective functioning of the health care system [5, 8, 9].

This finding agrees with the result of [36], who found that psychological challenges require psychological interventions. Also, the findings of [37] established that the token economy is an effective psychotherapy that decreases inappropriate negative behaviors and feelings. Other past studies that have established the effectiveness of TET on psychologically related problems are those by [38] and [33]. Their studies show that the token economy provides the psychological motivation that enables employees to be resolute, recover from emotional exhaustion, and perhaps reduce their desire to quit the job. Hence [38, 39], and [40] allude to psychological interventions, such as TET, as having a proven effect in improving the mental health outcomes of employees.

CONCLUSION

The aim of this study was to explore the effective role of TET in reducing the psychological burden on formal caregivers in Ibadan, Nigeria. This concern is premised on the critical role of healthcare providers in ensuring effective delivery of the healthcare system. Unfortunately, the inadequate workforce, acute shortage of competent healthcare workers, insufficient facilities and poor incentive packages are among other problems faced by resource-constraint nations like Nigeria, which often places psychological burdens on the victims, in this case, formal caregivers [41 - 47]. Being a cause-and-effect design, a pre-test and post-test control group was adopted to purposively group 30 healthcare workers who volunteered to participate in a four-week treatment program, except for the control group who received no treatment. This study demonstrated that TET was effective in reducing the psychological burden on formal caregivers. Therefore, TET is among the few interventions that have targeted healthcare workers' psychological burden and if effectively applied, it may ultimately boost the psychological well-being of formal health caregivers.

CLINICAL IMPLICATIONS

The findings indicated that TET is effective in reducing the psychological burden of formal caregivers. The concern of the authors is premised on the critical role of healthcare providers in ensuring the effective delivery of healthcare services, which often causes psychological burdens for the formal caregiver because of the inadequate workforce, acute shortage of competent healthcare workers, insufficient facilities, and poor incentive packages are among other problems faced by resources-constraint nations like Nigeria. To alleviate this burden, public health can adopt the token economy and improve the work productivity of workers in the health system for better health care delivery. Clinical counsellors, social psychologists, and social workers should employ TET as a treatment modality when encountering clients with psychological burdens, stress, distress, and anxiety.

STUDY LIMITATIONS

Like any other study, this study had a few shortcomings. Firstly, the study mainly considered only formal caregivers who are paramedics workers in the selected hospitals, leaving out medical professionals who are usually exhausted and face high workplace risk. A normal cause-and-effects research setting which is experimental research like this should have taken a minimum of six weeks. However, because of the peculiarity of the participants who are health workers, this study was conducted within a period of four weeks. Another limitation of this study was its tiny sample size. Also, the nature of the study only permitted a few participants, limiting the generalization of the study. Therefore, it is suggested that the replication of this study elsewhere is welcomed. This may validate and establish further the findings of this research. This study was limited to two state-owned general hospitals in Ibadan, Nigeria. The researcher suggests a further extension of the scope to include larger samples. It is suggested that the study should also be carried out in other health sectors to broaden the generalizations of this study. Nevertheless, the findings of this study are not invalidated by these limitations. Finally, future studies could consider the combination of interventions, such as cognitive therapy, psychoeducation, mindfulness, and emotional intelligence intervention, among others, to compare and decide which is more effective [48 - 50].

LIST OF ABBREVIATIONS

ANCOVA	=	Analysis of Covariance
CBT	=	Cognitive Behavior Therapy
CG	=	Control Group
CBI	=	Caregiver Burden Inventory
SDT	=	Self-determination Theory
SE	=	Standard Error
SSHREC	=	Social Science and Humanities Research Ethics Committee
TET	=	Token Economy Therapy

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

All ethical protocols were duly observed. Also, ethical clearance was obtained from the Social Science and Humanities Research Ethics Committee (SSHREC) (UI/SSHREC/2019/0001) and from the Ministry of Health through the Department of Planning, Research and Division.

HUMAN AND ANIMAL RIGHTS

No animals were used in this study. All procedures performed in studies involving human subjects were in accordance with the ethical standards of the institutional and/or research committee and with the 1975 Declaration of Helsinki as revised in 2013.

CONSENT FOR PUBLICATION

Informed consent was obtained from all the participants.

AVAILABILITY OF DATA AND MATERIALS

The data used in this work are not available publicly but could be provided by the author on reasonable request [K.C.L].

STANDARDS OF REPORTING

STROBE guidelines were followed in this study.

CONFLICT OF INTERESTS

The authors declare no competing interests.

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