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Advanced nursing monitoring: At-risk patients in Primary Care

Monitoramento avançado de enfermagem: pacientes de risco na atenção primária

Monitoreo avanzado de enfermería: pacientes de riesgo en atención primaria

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Abstract

Objective: to evaluate the effect of advanced versus usual Nursing monitoring to identify cardiovascular and renal risk, adherence to medication and practice of physical exercise in Primary Health Care. **Method:** a quantitative and quasi-experimental study developed in Primary Care. In relation to the intervention, there were quarterly Nursing advanced monitoring consultations and quarterly laboratory control. For data collection, a sociodemographic questionnaire, the Morisky scale and the International Physical Activity Questionnaire were applied. **Results:** the female gender predominated both in the intervention and in the control group (62.79% vs. 76.74%). The percentage of patients without cardiovascular risk in the intervention group exceeded the control group from consultation 1 to consultation 3 (0.00% - 25.58% vs. 6.98 - 2.33). Maximum adherence to medication, over time, was higher in the intervention group when compared to the control group (48.8% vs. 23.3%). The users' cardiovascular risk significantly interfered with physical activity in the intervention and control groups (p=0.0261 vs. 0.0438). **Conclusions and implications for the practice:** advanced monitoring enabled better identification of at-risk patients and guidelines for the hypertensive and diabetic patients at cardiovascular and renal risk, which favored advanced monitoring and contributed to self-management of the practice of physical exercise and adherence to medication, based on Nursing consultations.

Keywords: Primary health care; Risk factors for heart diseases; Advanced practice nursing; Adherence to medication; Monitoring.

Resumo

Objetivo: avaliar o efeito do monitoramento de enfermagem avançado em relação ao usual para identificação do risco cardiovascular e renal, adesão medicamentosa e prática de exercícios na atenção primária à saúde. **Método:** estudo quantitativo, quase-experimental desenvolvido na Atenção primária. Em relação a intervenção, foram consultas de enfermagem trimestrais de monitoramento avançado e laboratorial trimestral. Para coleta de dados, aplicou-se questionário sociodemográfico, escala Morisky e Questionário Internacional de Atividade Física. **Resultados:** sexo feminino predominou nos dois grupos intervenção e controle (62,79% vs 76,74%). O percentual de pacientes sem risco cardiovascular do grupo intervenção superou o grupo controle da consulta 1 para consulta 3, (0,00% - 25,58% vs. 6,98 - 2,33). Adesão medicamentosa máxima, ao longo do tempo, foi superior no grupo intervenção comparado ao grupo controle (48,8% vs. 23,3%). O risco cardiovascular dos usuários interferiu na atividade física de forma significativa no grupo intervenção e controle (p=0,0261 vs. 0,0438). **Conclusões e implicações para a prática**: a monitorização avançada possibilitou uma melhor identificação de pacientes de risco e orientações aos pacientes hipertensos e diabéticos com risco cardiovascular e renal, o que favoreceu o monitoramento avançado e contribuiu ao autogerenciamento da prática de exercícios e adesão medicamentosa, a partir de consultas de enfermagem.

Palavras-chave: Atenção primária à saúde; Fatores de risco de doenças cardíacas; Prática avançada de enfermagem; Adesão à medicação; Monitoramento.

Resumen

Objetivo: evaluar el efecto de la monitorización avanzada de enfermería frente a la habitual para identificar el riesgo cardiovascular y renal, la adherencia a la medicación y la práctica del ejercicio en la atención primaria de salud. **Método:** estudio cuasiexperimental cuantitativo desarrollado en Atención Primaria. En cuanto a la intervención, se realizaron consultas de enfermería trimestrales para seguimiento avanzado y laboratorio trimestral. Para la recopilación de datos se aplicó un cuestionario sociodemográfico, escala de Morisky y Cuestionario Internacional de Actividad Física. **Resultados:** el género femenino predominó tanto en el grupo de intervención como en el de control (62,79% vs 76,74%). El porcentaje de pacientes sin riesgo cardiovascular en el grupo de intervención superó al grupo de control desde la cita 1 hasta la cita 3 (0,00% - 25,58% frente a 6,98 - 2,33). La adherencia máxima al fármaco, a lo largo del tiempo, fue mayor en el grupo de intervención en comparación con el grupo de control (48,8% frente a 23,3%). El riesgo cardiovascular de los usuarios interfirió significativamente con la actividad física en los grupos de intervención y control (p = 0,0261 frente a 0,0438). **Conclusiones e implicaciones para la práctica:** la monitorización avanzada permitió identificar mejor a los pacientes en riesgo y orientar a los pacientes hipertensos y diabéticos con riesgo cardiovascular y renal, lo que favoreció el monitoreo avanzado y contribuyó al autocontrol de la práctica de ejercicio y la adherencia a la medicación, desde las consultas de enfermería.

Palabras clave: Atención primaria de salud; Factores de riesgo de enfermedad cardiaca; Enfermería de práctica avanzada; Adherencia a la medicación; Monitoreo.

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INTRODUCTION

Monitoring the health system users can be a strategy that contributes to timely changes and facilitates the establishment of direct collaboration goals with the patients when developing care plans centered on the patient's needs[1]. Therefore, it is believed that this strategy is promising to increase the ability for the self-management of chronic non-communicable diseases, such as diabetes mellitus and hypertension, being of paramount importance in improving health-related quality of life, in adherence to the practice of exercise physical and adherence to medication[2].

The high expenses related to the diabetes mellitus and hypertension control strategies currently impose a substantial burden on the global economy and, as a result, an increase in the direct and indirect costs[3,4], which can even be impacted by the increase in life expectancy, and the consequent increase in the number of people with multiple chronic diseases (multimorbidity). Patients with multimorbidity require specialized health care, a promising model offered in primary care as a differential for disease management and monitoring[5] and for consequent shorter waiting times and prevention of hospitalizations.

In this context, care models such as the advanced Nursing practice in primary care, consisting of nurses with specialized knowledge and decision-making and clinical skills, can be decisive for better management of the patients' needs, in addition to high-quality care[6].

However, there still seems to be a gap between the expected care and that provided by the health teams. Professional interventions seem to be alternatives to reduce gaps between these care models[7,8]. It is known that the biomedical model focuses efforts on physical well-being; therefore, adopting models with a holistic approach seems to show greater alignment with the premise of the World Health Organization (WHO), which considers health not only as absence of disease or illness[9] As an expanded phenomenon, it is considered that health involves ways of being and producing and/or recreating life in its uniqueness and multidimensionality[10].

A systematic review indicates that health professionals, including nurses in primary care, are qualified to support the provision of patients' self-care in a structured and evidence-based manner. A better understanding of the results of effective monitoring can benefit from the integration of these professionals, which can generate changes in the primary health care system[11], improve the patients' satisfaction, reduce complications and mitigate the risk factors[5] related to cardiovascular and renal diseases, generally present in patients with diabetes mellitus and hypertension.

In this sense, the objective of this study was to evaluate the effect of advanced versus usual Nursing monitoring to identify cardiovascular and renal risk, adherence to medication and practice of physical exercise in primary health care.

METHOD

A quantitative, quasi-experimental and non-equivalent study developed in a basic health unit in the West region of Brasília, Distrito Federal, Brazil.

The sample was for convenience and consisted of 86 users registered in the Family Health program: 43 from the intervention group and 43 from the control group, with medical diagnoses of diabetes mellitus and systemic arterial hypertension. Monitoring took place from February to December 2019.

The sample size obtained through the IBM SPSS Sample Power software, version 3.0, was 32 users/group, adopting α = 5% and β = 80% and the percentages of renal dysfunction found in the pilot test, carried out with ten health care users. Considering 20% losses, the sample size was at least 40 users in each group.

The study was carried out in one of the Basic Health Units (BHUs) in the West region of Brasília, Distrito Federal, Brazil. At the time, the team of professionals working in this BHU consisted of five community health agents, two nursing technicians, a nurse, a dentist and a physician. Complementary and integrated services to the care model provided to the population enrolled in this unit were Yoga Hatha, integrative community therapy, health and well-being, spinal health (physiotherapy), pelvic floor health (physiotherapy) and older adults' health (physiotherapy).

The inclusion criteria were users with medical diagnoses of arterial hypertension and Type 2 diabetes mellitus and preserved cognitive capacity assessed by the level of consciousness at the time of selection for the study. Users with physical disability to travel and who did not attend the Nursing consultations to monitor the cardiovascular and renal clinical conditions, adherence to medication and practice of physical exercise were excluded.

Regarding the intervention, there were quarterly Nursing consultations carried out during a nine-month period with advanced quarterly laboratory monitoring of the clinical conditions, adherence to medication and practice of physical exercise, and the same monitoring was maintained in the control group, although without quarterly laboratory control (usual model). For each patient there was a consultation with three-month intervals, which accounted for a total of three Nursing consultations.

The variables of interest were age, gender, schooling (elementary, secondary and higher education), training level, marital status, race, household arrangement (family, children, siblings, others), comorbidities, hemodynamic parameters (systolic and diastolic blood pressure), capillary blood glucose, glycated hemoglobin and serum creatinine, creatinine clearance, lifestyle, occupation, physical activity and adherence to medication. A structured sociodemographic questionnaire developed by the researchers, the Morisky scale[12] and the International Physical Activity Questionnaire (IPAQ)[13] validated in Brazil were used for data collection.

Investigation of adherence to medication was performed at the end of each consultation using the Morisky and Green Test with internal consistency of 0.61[12] which makes it possible to determine adherence or non-adherence. It consists of four questions to which the interviewees answer dichotomously, that

is, "yes/no" to the following questions: 1) Have you ever forgotten to take your medications?; 2) Were you careless with the times to take your medications?; 3) When you felt better, did you sometimes stop taking your medications?; and 4) When you felt bad, have you ever stopped taking your medications?

Thus, in the Morisky Test it is considered that a YES is equivalent to zero points, while a NO equals one point. Thus, the user whose answers are all negative has a high degree of adherence (maximum adherence), totaling four points. For moderate degree of adherence, when the total number of answers totals three points; and low degree of adherence, when the total is one or two points. The "non-adherent" classification occurs when all the answers are positive, totaling zero points[12].

IPAQ is a questionnaire that allows estimating the weekly time spent in physical activities of moderate and vigorous intensity, in different everyday contexts, such as: work, transportation, house chores and leisure, and also the time spent in passive activities, performed in a sitting position. The short version was used, consisting of seven open questions with information that allow estimating the time spent per week in different dimensions of physical activity (walks and physical efforts of moderate and vigorous intensities) and physical inactivity (sitting position)[13,14]. The level of physical activity was assessed once at the end of each Nursing consultation based on the score obtained by the sum of the number of days and minutes or hours of physical activities performed in the week prior to answering the questionnaire, and were thus classified as follows: very active (VIGOROUS Activity: ≥ 5 days/week and ≥ 30 minutes per session; or VIGOROUS Activity: ≥ 3 days/week and ≥ 20 minutes per session + MODERATE Activity and/or WALKING: ≥ 5 days/week and ≥ 30 minutes per session. Active (VIGOROUS Activity: ≥ 3 days/week and ≥ 20 minutes per session + MODERATE Activity or WALKING: ≥ 5 days/week and ≥ 30 minutes per session or any activity totaling: ≥ 5 days/week and ≥ 150 minutes/week (walking + moderate activity + vigorous activity). Irregularly active A (frequency: 5 days a week; or Duration: 150 minutes a week). Irregularly active B (those who did not meet any of the recommendation criteria regarding frequency or duration). Sedentary (those who did not perform any physical activity for at least 10 continuous minutes during the week)[13].

Data collection procedures

The users registered as hypertensive and diabetic were invited to participate in the research with mediation of the community agents.

A meeting was scheduled in the basic health unit to present the research and its objectives. The impossibility of guaranteeing randomness in the users' allocation process in an intervention or control group is a characteristic of the quasi-experiment and was related to the selection process based on the user's registration number in the primary care network.

The subjects who agreed to participate in the study signed the Free and Informed Consent Form. Classification of the users in the control and experimental groups followed the registration number criteria of Distrito Federal's Health Secretariat, and their final numerical combination, when even, indicated the user to the experimental group and, when odd, the user was directed to the control group. At the end, each user was instructed on the scheduling date for the first Nursing consultation.

During the consultation, the researcher measured blood pressure and capillary blood glucose and applied the questionnaire and the Morisky[12] and IPAQ[13] scales to assess adherence to medication and physical activity, respectively. Anthropometric measurements such as weight and height and clinical investigation with physical examination were also performed. The consultations lasted a mean of 50 minutes. During this period, guidelines on self-care measures such as blood pressure, weight and blood glucose control, were provided to better control the risks arising from hypertension and diabetes, the importance of physical exercise, dietary control and awareness of adherence to medication.

During the Nursing consultation in the office, measurement of systemic blood pressure was performed using a manual PAMED® sphygmomanometer with the user in the sitting position, after a 5-minute rest[15]. The measurement was repeated for confirmation when changes in the systolic pressure values < 90 or > 140 mmHg and in the diastolic pressure values < 60 or > 100 mmHg were identified[16].

Postprandial capillary glycaemia was assessed using an Accu-Chek® device, Active model, and G-Tech® lancets, after antisepsis of the pulp of one of the fingers and puncture with the lancet. The normality parameters of fasting and postprandial glucose were < 100 mg/dL and < 160 mg/dL, respectively[16].

To measure body weight, removal of excess clothing, shoes and accessories and emptying of the bladder were first requested. As for height, the users were instructed to position themselves on a Balmak BK300FAN® digital scale. Height was measured after positioning the user's dorsal region on the scale ruler without shoes[15].

Waist Circumference (WC) was measured to assess cardiovascular risk at the end of expiration using a measuring tape graduated in centimeters with the user in the supine position and identification of the midpoint between the last rib and the iliac crest. For women, increased cardiovascular risk was considered with waist circumference > 80 cm and, for men, with waist circumference > 94 cm[17].

The reference laboratory parameters were as follows: serum creatinine: 0.70 – 1.2 mg/dL, serum urea: 10.0 – 50.0 mg/dl, creatinine clearance for women: from 88 to 128 mL/min/1.73 m^2 and for men: from 97 to 137 mL/min/1.73 m^2 and glycated hemoglobin (HbA1c): low risk for diabetes, value below 5.7%, increased risk for diabetes, value from 5.7% to 6.4%; and diabetics, value above 6.4%, according to the protocol of Distrito Federal's Health Secretariat - Brazil[16].

For the users in the intervention group unlike the control group, at the end of the consultation, a voucher was handed in for the amount of the round trip public transportation ticket for the collection of laboratory tests (fasting glucose, glycated hemoglobin, serum creatinine and creatinine clearance), from

the public coffers. For the users in the control group, dosage of the laboratory tests was performed in the usual routine (once a semester) in the basic unit itself.

Cardiovascular risk was assessed using the Framingham Risk Calculator, which includes the following items: (1) age, (2) gender, (3) smoking history, (4) presence of diabetes, (5) Systolic Blood Pressure (SBP), (6) if a patient is currently on medication to reduce blood pressure, (7) total cholesterol, and (8) HDL cholesterol. This is a validated risk stratification tool that establishes a patient's risk of developing cardiovascular diseases[18].

Acute Kidney Injury (AKI) was assessed from the Kidney Disease: Improving Global Outcomes (KDIGO) classification, defined by an increase in sCr ≥ 1.5 times the baseline, in the last 7 days[19]. Baseline serum creatinine was the lowest value in the period up to 365 days[20] prior to the Nursing consultation. Urinary volume, although included as a KDIGO criterion, was not monitored due to the difficulty of accurate measurement in the PHC scenario. This classification allowed AKI identification and staging: (1) stage 1 (mild severity), when there is an increase of 1.5 to 1.9 times or greater than 0.3 mg/dL of the baseline creatinine value; (2) stage 2 (intermediate severity), when there is a 2.0 to 2.9-fold increase in baseline creatinine; and (3) stage 3 (high severity) characterized by a 3.0-fold increase in serum creatinine or a 4.0 mg/dL increase[19].

Identification of any clinical change in any of the Nursing consultations generated referral of the user to a specialized professional for targeted and specific courses of action for the problem detected, in order to devise an individualized care plan, with the health team responsible for the patient.

Descriptive analysis of the characterization variables was performed by calculating the absolute and relative frequencies and, to describe and compare the items of the constructs, the measurements of position, central tendency and dispersion were performed with calculation of median, means, standard error (SE) and 25 and 75 percentiles, for continuous quantitative variables. Homogeneity between groups was assessed by Fisher's and Chi-square tests. The Kolmogorov-Smirnov test was performed and asymmetry was identified. Fisher's exact test or its extension known as Fisher-Freeman-Halton for a contingency table greater than 2x2 was used for comparisons between categorical variables. To relate adherence to medication in different Nursing consultations, the Friedman test was used to detect differences between medians of more than two paired samples. The R statistical program, version 3.6.1, was used and $\alpha = 0.05$ was considered significant.

In compliance with Resolution 466/2012, this study was approved by *Fundação Ensino e Pesquisa em Ciências da Saúde* (FEPECS), under CAAE: 46509915.3.0000.5553, as per Resolution 466/2012.

RESULTS

The study participants were 86 users: 43 from the control group and 43 from the experimental group, with predominant absence of a significant difference between the groups by the homogeneity test. The median ages of the control and the experimental groups were 60 (41-66) and 59 (47.5-69) years old, respectively. There was predominance of the female gender (76.74% vs. 62.79%) in both groups, respectively. Elementary education was stated by the majority (74.41% vs. 58.14%), as well as married marital status (58.14% vs. 67.44%). The exercise of professional activity was predominant in the intervention group (44.19%), as well as a history of alcoholism and smoking (41.86% vs. 48.84%). Dyslipidemia and depression were more frequently reported in the control group (51.16% and 34.88%), respectively (Table 1).

It is noteworthy that the mean serum glucose level between the intervention and control groups was similar, 109 mg/dL (SE=6.71) vs. 105 mg/dL (SE=20.0), different from glycated hemoglobin, with 6.50 (SE=0.3) vs. 8.10 (SE=3.58) and mean serum creatinine (0.84; SE=0.05 mg/dL vs. 0.90; SE=0.28 mg/dL). Mean systolic blood pressure was higher in the control group than in the intervention group (135.31; SE=3.25 mmHg vs. 126.55; SE=3.11 mmHg) and diastolic blood pressure presented the opposite behavior (79.42; SE=3.29 mmHg vs. 82.43; SE=2.42 mmHg).

It was observed that 9.52% of the patients in the control group evolved with risk for AKI and 4.76% with kidney injury and failure, respectively, during the follow-up period. The intervention group did not present any risk, nor did it evolve with AKI during follow-up.

It is observed that, among the cardiovascular risk levels, the intervention group, throughout the consultations, showed an increase in the no-risk condition (0.00% vs. 25.58%). In the control group, the opposite occurred: from the 6.98% without risk at consultation 1, it went to 2.33% at the third consultation. It is to be noted that there were no patients at high cardiovascular risk in the intervention group and that the percentage was low in the control group, with no change in the pattern during follow-up (2.33%). In the control group, the number of low-risk users increased (27.92% vs. 55.81%) and the mean risk was reduced (62.79% vs. 39.53%). In the intervention group, low risk was little reduced (48.84% vs. 41.86%), as well as mean risk (51.16% vs. 32.56%), from the first to the third consultation (Table 2).

With the Morisky-Green test, it was observed that most of the users in the control and experimental groups still reported forgetting to take their medications at the third consultation (65.1% vs. 48.8%), with greater expressiveness for the control group. Carelessness in taking the medications (item 2) was greater in the control group when compared to the intervention group (46.5% vs. 34.9%) (Table 3).

In both groups, the percentage referring to interruption taking the medications due to feeling bad was reduced throughout the consultations: control group (from 14.0% to 9.3%) and intervention group (from 16.3% to 11.6%) (Table 3).

Maximum adherence to medication at the third consultation was expressed mainly in the intervention group when compared

Table 1. Descriptive and homogeneity analysis of the users' identification variables. Brasília, 2019.

	Variables	Intervention Group		Control Group		p-value
		N	%	N	%	
Schooling	Elementary School	25	58.14	32	74.41	0.361
	High School	11	25.58	6	13.95	
	Higher Education	7	16.27	5	11.63	
Gender	Female	27	62.79	33	76.74	0.240
	Male	16	37.21	10	23.26	
Active in the profession	Yes	19	44.19	13	30.23	0.285
Marital status	Married	29	67.44	25	58.14	0.806
	Single	8	18.60	11	25.58	
	Widow	4	9.30	4	9.30	
	Others	2	4.65	3	6.98	
Race	White	9	20.93	10	23.26	0.836
	Brown	26	60.47	27	62.79	
	Black	8	18.60	6	13.95	
Does this daily	Household chores	23	53.49	31	72.09	0.307
	Takes care of grandchildren	2	4.65	1	2.33	
	Works	17	39.53	10	23.26	
	Works as a freelancer	1	2.33	1	2.33	
Household arrangement	Companion	8	18.60	4	9.30	0.341
	Family	23	53.49	30	69.77	
	Children	6	13.95	2	4.65	
	Sibling	1	2.33	2	4.65	
	Others	5	11.63	5	11.63	
Smoker	Former smoker	21	48.84	11	25.58	0.018
	Yes	6	13.95	3	6.98	
Alcohol	Former drinker	18	41.86	6	13.95	0.002
	Yes	8	18.60	4	9.30	
Comorbidity						
Stroke		3	6.98	6	13.95	0.483
Kidney disease		2	4.65	4	9.30	0.676
Dyslipidemia		10	23.26	22	51.16	0.014
Depression		10	23.26	15	34.88	0.342

Fisher's Test; Chi-Square Test
Source: Research Data.

to the control group (48.8% vs. 23.3%). Non-adherence was reduced both in the control group and in the intervention group, proportionally (from 4.7% to 2.3%) vs. (from 9.3% to 4.7%), although without statistical difference (Table 4).

The results showed that cardiovascular risk significantly interfered in the level of physical activity both in the control group (p=0.0438) and in the intervention group (p=0.0261) (Table 5).

Table 2. Classification of cardiovascular risk at the different consultations of the control and intervention group. Brasília, 2019.

Cardiovascular risk	Intervention Group						Control Group					
	Consultation 1		Consultation 2		Consultation 3		Consultation 1		Consultation 2		Consultation3	
	N	%	N	%	N	%	N	%	N	%	N	%
High	-	-	-	-	-	-	1	2.33	1	2.33	1	2.33
Low	21	48.84	21	48.84	18	41.86	12	27.91	24	55.81	24	55.81
Medium	22	51.16	20	46.51	14	32.56	27	62.79	17	39.53	17	39.53
No risk	0	0.00	2	4.65	11	25.58	3	6.98	1	2.33	1	2.33

Source: Research Data.

Table 3. Distribution of the answers related to adherence to the drug therapy (Morisky-Green) in hypertensive and diabetic patients. Brasília, Distrito Federal, 2019.

Groups	Control			Intervention			Total		
Consultation	C1	C2	C3	C1	C2	C3	C1	C2	C3
Questions	Yes n (%)	Yes n(%)	Yes n(%)	Yes n(%)	Yes n(%)	Yes n(%)	Yes n (%)	Yes n(%)	Yes n(%)
Have you ever forgotten to take your medications?	19 (44.2)	18 (41.9)	28 (65.1)	25 (58.1)	20 (46.5)	21 (48.8)	44(51.2)	38 (44.2)	49 (57)
Were you careless with the times to take your medications?	16 (37.2)	14 (32.6)	20 (46.5)	16 (37.2)	16 (37.2)	15 (34.9)	32 (37.2)	30 (34.9)	35 (40.7)
When you felt better, did you sometimes stop taking your medications?	8 (18.6)	6 (14.0)	6 (14.0)	9 (20.9)	10 (23.3)	10 (23.3)	17 (19.8)	16 (18.6)	16 (18.6)
When you felt bad, have you ever stopped taking your medications?	6 (14.0)	9 (20.9)	4 (9.3)	7 (16.3)	9 (20.9)	5 (11.6)	13 (15.1)	18 (20.9)	9 (10.5)

C = Consultation.
Source: Research Data.

DISCUSSION

The findings showed that advanced monitoring integrated with the Nursing consultations was more effective to control cardiovascular and renal risk, as well as adherence to medication and assessment of the practice of physical exercise. A systematic review showed that face-to-face guidelines provided the patients with clinical self-management and better action planning[11].

In this context, the nurse in the exercise of collaborative care practices plays a fundamental role in the advanced management of chronic diseases, from the control and monitoring of risk factors, qualified assessment of treatments and medications based on informative work that influences the public policies[21,22].

However, multimorbidity is understood as a challenge for self-management of care, especially in conditions such as the one in the study, aggravated by the high incidence of cardiovascular risk factors, as the study patients, in addition to being hypertensive and diabetic, reported the following as comorbidities both in the control and in the intervention group: stroke (13.95% vs. 6.98%), dyslipidemia (23.26% vs. 51.16%) and kidney disease (9.30%

Table 4. Characterization of adherence to the drug therapy (Morisky-Green) in hypertensive and diabetic patients. Brasília, Distrito Federal, 2019.

Morisky Classification	Control			p-value	Intervention			p-value
	C1	C2	C3		C1	C2	C3	
	n (%)	n (%)	n (%)		n (%)	n (%)	n (%)	
0 Non-adherent	2 (4.7)	2 (4.7)	1 (2.3)	0.26	4 (9.3)	4 (9.3)	2 (4.7)	0.35
1 Low adherence	15 (34.9)	14 (32.6)	20 (46.5)		16 (37.2)	14 (32.6)	15 (34.9)	
2 Moderate adherence	9 (20.9)	10 (23.3)	12 (27.9)		7 (16.3)	8 (18.6)	5 (11.6)	
3 Maximum adherence	17 (39.5)	17 (39.5)	10 (23.3)		16 (37.2)	17 (39.5)	21 (48.8)	

Friedman's Test. C = Consultation
Source: Research Data.

Table 5. Comparison between level of physical activity and risk classification. Brasília, 2019.

Risk classification	Group		IPAQ - Level of physical activity								p-value
	Very active		Active		Irregularly active A		Irregularly active B		Sedentary		
	N	%	N	%	N	%	N	%	N	%	
High risk	Control	0	0.00	3	8.82	0	0.00	0	0.00	0	0.00	0.043
Low risk		10	83.33	10	29.41	8	40.00	15	53.57	14	45.16	
Medium risk		1	8.33	19	55.88	11	55.00	13	46.42	16	51.61	
No risk		1	8.33	2	5.88	1	5.00	0	0.00	1	3.22	
High risk	Intervention	0	0.00	0	0.0	0	0.0	0	0.00	0	0.0	0.026
Low risk		16	66.66	17	53.12	10	43.47	14	35.89	3	27.27	
Medium risk		4	16.66	12	37.50	9	39.13	23	58.97	8	72.72	
No risk		4	16.66	3	9.37	4	17.39	2	5.12	0	0.00	

Fisher's Exact test.
Source: Research Data.

vs. 4.65%), respectively. However, in the field of kidney disease, it is noteworthy that the following was only detected in the control group during follow-up: patients at risk for acute kidney injury (9.52%), kidney injury and failure (4.76%), respectively, according to the KDIGO classification[19].

Thus, the role of communication is highlighted as a differential between the patient and the health team members for management of the disease to be established, as well as adherence to the treatment to the extent that self-perception of the need for treatment is provided by the patients themselves[23]; therefore, Nursing consultations can create a feedback cycle and increase the patients' involvement in the health-disease process[22,24].

Most of the contributing risk factors for cardiovascular diseases identified in the current research are modifiable. These risk factors must be known, monitored and documented so that interventions can be planned and implemented by the health team through collaborative work[25]; given that, in the current research, cardiovascular risk interfered even in the practice of physical activity, both in the intervention group (p=0.0261) and in the control (p=0.0438). This reinforces the importance of primary prevention of cardiovascular diseases, although diseases such as depression, proportionally identified among the patients in the intervention and control groups, can hinder care management[26]. In this aspect, the nurse working in an advanced care model can even promote targeted care and contribute to the reduction of depression rates, as presented in a systematic review that addresses the role of nurses in long-term care[27], considering that the advanced exercise of care has been expanded to the public health system[28], even in Brazil, as a possibility to respond to the problems arising from health needs.

Care management includes specific approaches, according to the underlying cause, to prevent and control complications[29], such as the cases of renal risk, injury and failure identified among the patients, which highlights the importance of recognizing AKI as a binary pathology, that is, one that can evolve with recovery of the renal function or with the need for dialysis. In this context, health professionals, such as nurses, can play a fundamental role in patient self-management, especially in those with chronic diseases, through an efficient care model that enables the implementation of integrated interventions in the context of primary health care[11]. This type of care model contributed to the increase in the number of patients without cardiovascular risk in the intervention group (from 0.00% to 25.58%), whereas in the control group the number of patients without risk decreased from 6.98% to 2.33%, which evidences greater success in managing the group with advanced monitoring (intervention).

In this context, the importance of the role of advanced practice nurses has been discussed, which integrates research, education, care practice and management into their assistance-related performance. Thus, this nurse must have professional autonomy and competence to make clinical decisions, carry out assessments, diagnoses and prescriptions, being responsible for case management and evaluation and implementation of care programs and plans, in addition to being a reference as the first point of contact for users with the health services[28], essential conditions in primary care.

Management in primary care through teams of professionals has been shown to be a promising care model that aims at identifying at-risk patients[8], as well as assisting with medication management, education about medications, and training to improve adherence to medication[30]. It is known that such adherence is an important aspect for effectiveness in the treatment, health costs and patient safety[8,31]; it also translates the notion of agreement, that is, a shared decision-making process between patients and health professionals. Many older adults suffer from several diseases and are therefore treated with different medications, which poses a greater risk of poor adherence and exacerbation of chronic diseases[32,33]. it is noted that the number of non-adherents was reduced proportionally in both groups: control and intervention. However, maximum adherence increased, mainly, in the intervention group (from 37.2% to 48.8%), although without statistical significance. Non-adherence and the inability to buy medications contribute to uncontrolled chronic conditions, unnecessary intensification of therapy and greater use of health services[34,35].

Many guidelines provided in consultations are forgotten by 40% to 80% of the patients[36]. Factors such as old age[37] and lower schooling[38,39] can favor the process of forgetting; these characteristics were found among the patients in this study. In this context, primary care services, as in the current research, often with few resources, should focus efforts on the development of monitoring and risk stratification models that incorporate data from primary and secondary care, in addition to real-time clinical data, collected during evaluation of the patient for better targeting and individualization of the care provided[40].

In this sense, the contribution of Nursing monitoring with information and awareness-raising work in the field of public health[22], in an intensified way, proved to be relevant, contributing to the self-care of hypertensive and diabetic users, highlighting the contribution and importance of these professionals in the context of primary health care[41].

CONCLUSIONS AND IMPLICATIONS FOR THE PRACTICE

Advanced monitoring enabled better identification of at-risk patients and guidelines for hypertensive and diabetic patients with cardiovascular and renal risk, which favored advanced monitoring and contributed to self-management of the practice of physical exercise and adherence to medication, based on Nursing consultations. There was also a high rate of modifiable risk factors for cardiovascular diseases, with a negative impact on the practice of physical activity.

The limitations of this study are concentrated in the fact that it was a quasi-experimental single-center study, which configures the impossibility of a randomized sampling and, therefore, can favor the occurrence of the risk of selection bias. However, to minimize this risk, an impartial criterion was established based on each patient's registration number, reducing the chance of manipulation in the selection process. It was not possible to perform an analysis of the effects of the medications due to the amount of missing data, and the renal function was assessed only by serum creatinine due to the impossibility of accurately obtaining the urinary volume.

On the other hand, it is evidenced that the advanced monitoring carried out by nurses has contributed to users' self-care through the possibility of expanding understanding of the importance of this care model guided by Nursing consultations, establishing a feedback cycle and building a bond of trust in the which communication, when associated with intensified control of hemodynamic and laboratory variables, proved to be an essential tool that facilitates self-perception of the need for care and promoted greater adherence to treatment, as well as care self-management.

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Data analysis. Layse Farias Nava. Wellington Luiz de Lima. Marcia Cristina da Silva Magro. Tayse Tâmara da Paixão Duarte.

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