Why Do WIC Participants Fail to Pick Up Their Checks? An Urban Study in the Wake of Welfare Reform

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Enactment of the Personal Responsibility and Work Opportunity Reconciliation Act and the Illegal Immigration Reform and Immigrant Responsibility Act in 1996 affected the eligibility of many low-income and immigrant families for Supplemental Security Income, food stamps, Medicaid, and other federal programs. Subsequently, there were steep declines in welfare, food stamp, and Medicaid enrollments.¹⁻⁴ The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), which provides food vouchers to pregnant, postpartum, and breast-feeding women as well as infants and children up to the age of 5 years, was not officially affected by the new welfare and immigration legislation. Nonetheless, there have been reports of declining WIC caseloads.5

An aggregate study conducted in New York City showed that during implementation of this legislation, there was a strong correlation between the rate of WIC participants failing to pick up checks and the proportion of foreign-born mothers residing in the study area.⁶ In addition, routine telephone calls to participants in New York City revealed that the most common reasons for missing appointments were work- or school-related problems and women's belief that they were no longer eligible for WIC because they had lost Medicaid coverage. Both failure to collect checks and program withdrawal are of concern, given consistent reports of WIC's positive influence on health outcomes.^{7–10}

Lack of attendance at regular appointments and retention are serious issues affecting the WIC program. A 2000 survey of New York City centers revealed that the average monthly rate in regard to failure to pick up checks was 6.9%.¹¹ In the present case–control study, we explored why WIC participants missed check collection appointments. Specifically, we examined whether work commitments, possibly related to welfare reform, or concerns about immigration *Objectives.* This study explored whether work or immigration concerns affect women's participation in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC).

Methods. The sample included women who had withdrawn from the WIC program and current WIC clients from 1 center in New York City. Logistic regression analyses were used to predict noncollection of checks; demographic characteristics, program participation, and problems with the WIC program were independent variables.

Results. Strong predictors of noncollection of checks were job conflicts, transportation or illness problems, and WIC receipt by the woman herself (rather than by her children).

Conclusions. Employment conflicts were related to failure to pick up WIC checks; immigration concerns were not. As a means of enhancing WIC participation, flexibility is recommended in terms of center hours, locations, and staffing and program check distribution policies. (*Am J Public Health*. 2003;93:477–481)

status made it difficult to comply with WIC requirements. In contrast to previous studies, our investigation focused on a WIC center in New York City with a substantial immigrant population.^{12–14}

METHODS

Our sample included former WIC participants who had withdrawn from the program ("leavers") and current participants ("clients"). We identified those who had left the program by reviewing, for the months September and October 2000, participant check registers containing an entry of "void" or "void unclaimed." Files for these participants were then checked to ensure that telephone numbers were not duplicated. Up to 3 telephone calls were made to each number, yielding 188 interviews. A group of 280 clients continuing to pick up checks was selected from the center's waiting room on recertification days; clients were interviewed on-site. Experienced bilingual (English/Spanish) interviewers conducted both telephone and on-site interviews between January and March 2001.

Our original power analysis indicated that individual group sizes of 270 were required to test the hypothesis that women not collecting checks were 10% more likely than continuing participants to be involved in welfare-towork programs. This number was based on the assumption that 15% of all women participating in WIC (i.e., either they or their children received benefits) were working. Because more than twice this employment rate was revealed in the survey, our power to detect a significant difference (P=.05) with the smaller sample size was 80%.

Interviews were based on a structured questionnaire containing open-ended questions on experience with WIC (e.g., whether the respondent had participated in WIC herself, her child had participated, or both), reasons for not picking up checks, and suggestions for improving the WIC program. Closed-ended items focused on history of participation in other public benefit programs, demographic characteristics, and problems experienced with the WIC program. Variables were selected on the basis of their usefulness in previous studies, as well as on the basis of recommendations made by WIC staff members.

We used χ^2 tests to identify differences between leavers and clients. We then used logistic regression analyses to "predict" who would fail to pick up checks. Analyses were conducted with SPSS version 9.0 for Windows.¹⁵

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TABLE 1—Comparison of Leavers and Clients: Demographic Variables and Program Participation

Characteristics	Leavers (n = 188), %	Clients (n = 280), %	Total (n = 468), %	Pª
Age, y				NS
15-29	51.6	52.9	52.4	
≥ 30	48.4	47.1	47.6	
Education				.065
Less than high school	49.2	56.8	53.8	
High school or more	50.8	43.2	46.2	
Marital status				.015
Living with a partner	56.4	66.8	62.6	
Not living with a partner	43.6	33.2	37.4	
Employment				.001
Not working	53.0	67.6	61.8	
Working ^b	47.0	32.4	38.2	
Birthplace				NS
Foreign born	89.8	88.9	89.3	
US born	10.2	11.1	10.7	
Years in US among foreign born				.036
0-7	45.6	55.4	51.4	
>7	54.4	44.6	48.6	
Program participation				
WIC for self ^c	23.9	17.4	20.0	.054
WIC for child	95.7	97.1	96.6	NS
Medicaid for self	29.9	25.4	27.2	NS
Medicaid for child	65.8	75.5	71.6	.016
Child Health Plus for child	19.1	14.4	16.3	NS
Current TANF	9.6	8.9	9.2	NS
Previous TANF ^d	17.5	10.2	13.1	.021
Food stamps	16.5	18.7	17.8	NS

Note. Leavers are former WIC participants; clients are continuing WIC participants. Values refer to the percentages of respondents replying affirmatively. Missing data are excluded in all tables. TANF = Temporary Assistance to Needy Families. $^{a}\chi^{2}$ test.

^bIncludes part-time and full-time employment.

^cMore than 80% of these women also received WIC for a child.

^dDoes not include women currently receiving TANF.

RESULTS

Telephone Survey

Forty-four percent of eligible leavers were successfully interviewed. Among those not interviewed, the most common reason for not making contact was that no one answered the telephone; in such instances, 27.5% of the telephones had been disconnected.

Bivariate Analysis

Leavers and clients were similar in regard to most demographic variables (Table 1). There was no significant age difference (mean: 29.5 years); 90% of the members of both groups identified themselves as Hispanic; and only about 10% of each group reported having been born in the United States. Of those born abroad, leavers were likely to have been in the United States longer; 54.4% of these women had been in the country for more than 7 years, compared with 44.6% of current clients (P= .036). In the case of both groups, Spanish was the language spoken in most (close to 86%) of the women's homes, and about half of the members of each group had not finished high school. Leavers were more likely to be living without a partner and to be working.

In comparison with clients, leavers were more likely to have received WIC for themselves while pregnant or lactating (regardless of their children's participation); they were less likely to have a child with Medicaid coverage (65.8% vs 75.5% among clients; P=.016). Although the groups had similar rates of current Temporary Assistance to Needy Families (TANF) participation (close to 10%), leavers were much more likely to have participated at some time in the past (17.5% vs 10.2% among)clients; P=.021). Among the women who had ever received TANF benefits, more of the leavers had stopped receiving WIC because they found employment (69.2% vs 56.5%, P=.053).

When asked about possible barriers to WIC participation, the 2 groups of respondents provided very different answers (Table 2). Problems involving "long waits" were reported more frequently by clients (68.6%) than by leavers (55.1%; P=.002). On the other hand, leavers were much more likely than clients to report problems with transportation (23.0% vs 10.0%; P=.000), family illnesses (23.8% vs 10.7%; P=.000), job conflicts (31.6% vs 13.9%; P=.000), and perceptions of increased income affecting eligibility (39.7% vs 26.1%; P=.002). In responding to the open-ended questions regarding why they had failed to pick up their checks, none of the women mentioned concerns about their immigration status.

Regression Analysis

An initial logistic regression model that included all of the sociodemographic, program participation, and problem variables was used to predict which women would be leavers (Table 3, model 1). Marital status and employment status, although significant in the bivariate analysis, were nonsignificant in the regression analysis. The variables "WIC self-participation" and "Medicaid for child" both had significant influences on women's likelihood of being leavers, but in opposite directions. Women who had received WIC themselves were twice as likely to be leavers compared with women who had not received

TABLE 2—Comparison of Leavers and Clients: Closed-Ended Questions Focusing on WIC Problems

Problem	Leavers (n = 188), %	Clients (n = 280), %	Total (n = 468), %	P ^a
Transportation	23.0	10.0	15.2	.000
Long waits	55.1	68.6	63.2	.002
Illness in family	23.8	10.7	15.9	.000
Job conflict	31.6	13.9	21.0	.000
School conflict	6.5	2.1	3.9	.018
Small check ^b	33.2	41.4	38.1	.046
Increased income ^c	39.7	26.1	31.6	.002
Postpartum period ^d	26.4	19.0	22.0	.042
Food choices ^e	18.4	11.4	14.2	.026

Note. Leavers are former WIC participants; clients are continuing WIC participants. Values refer to the percentages of respondents replying affirmatively.

 ${}^{a}\chi^{2}$ test.

^bRespondent believed that the WIC check was insufficient.

^cRespondent believed that as a result of increased income, she was no longer eligible for WIC.

^dRespondent believed that during the postpartum period, she was no longer eligible for WIC.

^eRespondent believed that the WIC food choices were too limited.

TABLE 3—Logistic Regression Analysis: Characteristics Associated With Withdrawing From WIC (n = 468)

			Ма	Model 1 ^ª		Model 2 ^b	
Characteristic	OR	95% CI	AOR	95% CI	AOR	95% CI	
30 years or older	1.05	0.73, 1.52	1.06	0.68,1.66			
High school education or more	1.36	0.93, 1.97	1.37	0.86, 2.18			
No marital partner	1.56*	1.06, 2.28	1.31	0.78, 2.19			
Employed	1.85**	1.26, 2.72	1.59	0.94, 2.70			
US born	0.91	0.50, 1.66	0.53	0.24, 1.18			
WIC for self ^c	1.49	0.95, 2.36	1.90*	1.04, 3.46	1.71*	1.05, 2.80	
WIC for child ^{c}	0.66	0.24, 1.80	0.94	0.27, 3.30			
Medicaid for $self^c$	1.25	0.83, 1.90	1.28	0.75, 2.20			
Medicaid for child ^c	0.62*	0.42, 0.94	0.50**	0.30, .84	0.63*	0.41, 0.98	
Current TANF ^c	1.08	0.57, 2.04	1.61	0.70, 3.69			
Transportation ^c	2.69**	1.60, 4.51	2.00*	1.08, 3.72	2.25**	1.29, 3.90	
Illness in family ^c	2.60**	1.56, 4.32	2.68**	1.48, 4.85	2.80**	1.64, 4.78	
Job conflict ^c	2.85**	1.80, 4.50	1.87*	1.02, 3.44	2.78*	1.70, 4.52	
Increased income ^c	1.87**	1.24, 2.80	1.59	0.94, 2.66			
Postpartum period ^c	1.52	0.97, 2.38	1.21	0.67, 2.18			
Food choices ^c	1.75*	1.03, 2.97	1.11	0.58, 2.12			

Note. OR = odds ratio; AOR = adjusted odds ratio; CI = confidence interval; TANF = Temporary Assistance to Needy Families. ^aModel correctly predicts 69.8% of all cases.

^bModel correctly predicts 66.7% of all cases.

^c"Yes" responses.

*P<.05; **P<.01.

WIC themselves (adjusted odds ratio [AOR] = 1.90; 95% confidence interval [CI] = 1.04, 3.46; *P*<.05). Women who received Medic-

aid for their child were about half as likely to be leavers (adjusted AOR=0.50; 95% CI=0.30, 0.84; P<.01).

Transportation problems, family illnesses, and job conflicts were very strong predictors of whether women had withdrawn from the WIC program. (For example, in terms of job conflict, one woman reported that "the amount of money received from WIC didn't justify my loss of wages by taking a day off work.") Respondents reporting 1 of these problems were 2 to 3 times as likely to have left the program compared with women reporting no such problems (respective adjusted odds ratios were 2.00, 2.68, and 1.87 for the 3 problems).

A model including the 5 most significant independent variables successfully predicted the status of 66.74% of the respondents (Table 3, model 2). The likelihood that a woman would withdraw from the program increased if she had received WIC for herself and reported problems with transportation, illness, or job conflict. Women who had job conflicts were nearly 5 times (adjusted OR= 4.52) more likely to be leavers. In contrast, women with children on Medicaid were about half as likely to be leavers (adjusted OR=0.41). This effect may have been due to the higher percentage of working women among those not receiving Medicaid for their children; 49.6% of women with no children on Medicaid were working, compared with 33.2% of women with children on Medicaid (P=.001).

Sixty-three current clients reported that they had failed to pick up checks at least once in the past. Two regression models were used to predict which such clients had failed to collect checks (Table 4, models 1 and 2). In the first model, only family illness greatly increased the likelihood of women not collecting checks (adjusted OR=7.32; 95% CI= 2.81, 19.10; *P*<.01). In the second model, both family illness (adjusted OR=5.34; 95%) CI=2.34, 12.16; P<.01) and job conflict (adjusted OR=2.28; 95% CI=1.06, 4.93; P< .05) were significant in terms of increasing women's chances of having missed a check pickup. Models 1 and 2 correctly predicted approximately 80% of all cases.

DISCUSSION

Our results confirm that conflicts involving work commitments are related to women's

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TABLE 4—Logistic Regression Analysis: Characteristics Associated With History of Not Picking Up Checks (n = 280)

	Model 1ª		odel 1ª	Model 2 ^b		
Characteristic	OR	95% CI	AOR	95% CI	AOR	95% CI
30 years or older	0.83	0.47, 1.45	1.48	0.74, 0.96		
High school education or more	1.56	0.87, 2.80	0.64	0.31, 1.32		
No marital partner	1.09	0.60, 1.99	0.84	0.37, 1.92		
Employed	0.95	0.52, 1.72	0.93	0.38, 2.26		
US born	0.82	0.35, 1.92	2.53	0.78, 8.06		
WIC for self ^c	1.34	0.61, 2.95	0.55	0.18, 1.64	0.74	0.32, 1.71
WIC for child ^c	1.15	0.23, 5.83	0.60	0.07, 4.90		
Medicaid for self ^c	1.25	0.64, 2.43	1.38	0.58, 3.27		
Medicaid for child ^c	1.00	0.52, 1.94	1.25	0.53, 2.93	1.08	0.53, 2.18
Current TANF ^c	0.91	0.35, 2.39	1.08	0.31, 3.82		
Transportation ^c	0.86	0.35, 2.12	1.06	0.34, 3.28	0.90	0.34, 2.39
Illness in family ^c	0.20**	0.09, 0.44	7.32**	2.81, 19.10	5.34**	2.34, 12.16
Job conflict ^c	0.40*	0.19, 0.82	2.12	0.79, 5.74	2.28*	1.06, 4.93
Increased income ^c	0.96	0.50, 1.84	0.79	0.35, 1.80		
Postpartum period ^c	0.42**	0.22, 0.81	2.01	0.84, 4.79		
Food choices ^c	0.56*	0.25, 1.27	1.54	0.56, 4.24		

Note. History of not picking up checks refers to continuing WIC participants (clients) only. Of the 280 continuing WIC participants (clients), 63 reported that they had not picked up their checks at some time. OR = odds ratio; AOR = adjusted odds ratio; CI = confidence interval; TANF = Temporary Assistance to Needy Families.

^aModel correctly predicts 81.7% of all cases.

^bModel correctly predicts 78.8% of all cases.

^c"Yes" responses.

P*<.05; *P*<.01.

failure to pick up WIC checks. Furthermore, in the case of a subset of former WIC participants, employment was part of new TANF requirements. Although some of these working women may have lost WIC eligibility as a result of increased incomes, their Medicaid participation rates suggest that many still had incomes low enough to continue WIC. Among those who had left the program, 29.9% were covered by Medicaid themselves, and 65.8% had at least 1 child covered by Medicaid.

None of the women cited immigration concerns as a reason for withdrawing from WIC. Furthermore, when the study results were shared with WIC staff members from centers across New York City, these individuals confirmed that evidence of immigrant fears at the time of the new legislation had disappeared over subsequent years.

The major barriers related to WIC participation reported by our respondents echo the results of previous studies. Nearly half of the respondents in an earlier study conducted in New York State reported that waits were too long, and many reported that they had trouble getting time off work to attend WIC appointments.¹⁴ A national study revealed that many WIC agencies had long waits owing to inadequate space and insufficient staff.¹⁶ One study focused on efforts to improve client flow at a WIC center slowed down by the numerous federally mandated tasks staff members had to complete at each visit.¹⁷ Finally, a study conducted in Maryland showed that work or school conflicts and lack of transportation were the main reasons that WIC participants withdrew from a voluntary nutrition education program.¹³

Our present experience with telephone interviews conducted among low-income, primarily immigrant women was more successful than we expected; however, the process was still very time-consuming and may have produced a biased sample. Unfortunately, previous studies involving the use of telephone interviews with similar populations have not reported rates of completed interviews that can be compared with ours. $^{\rm 18,19}$

Other limitations of our study need to be considered in evaluating the present results. The sample was derived from 1 WIC center at 1 point in time, limiting the generalizability of our findings. Also, we did not inquire either about the value of the WIC checks in question or about the respondents' incomes, factors that could have influenced decisions on whether to pick up checks.

Nationally, monthly rates of participation in WIC are about 8% lower than monthly enrollments; a recent study conducted in New York State revealed that fully 46% of WIC participants reported ever having failed to collect or to cash their checks.^{4,20,21} Given the significant amount of research pointing to the beneficial effects of WIC participation on the health of pregnant women, infants, and children, our findings suggest that flexibility is crucial in regard to maintaining program participation rates and thereby enhancing the numbers of low-income families that reap these benefits. Center hours, locations, and staffing and WIC benefit distribution policies should be adapted to the current situations of many eligible participants who are members of the workforce.

For example, Maryland agencies have increased accessibility to the WIC program by providing evening and weekend hours as well as more convenient locations, including shopping malls.²² Moreover, nearly 80% of food stamp benefits in the United States are now distributed by means of electronic benefit transfer systems, saving recipients the time of picking up paper stamp books.²³ The same electronic systems are gradually being introduced into a few WIC programs but should be instituted more widely to increase the numbers of women, infants, and children served by WIC. ■

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Contributors

T.J. Rosenberg played a major role in every stage of the study, including the original study design, development of the instrument, training of the interviewers, data collection, data analysis, and the writing of the article. J.K. Alperen supervised parts of the data collection, completed the data entry and preliminary data analysis, and contributed to drafts of the article. M.A. Chiasson was an important advisor throughout and, in particular, made many suggestions in revising the article.

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Human Participant Protection

This study was declared exempt from review by the Medical and Health Research Association institutional review board. No identifying information was collected from participants, the research did not place respondents at risk, and the survey did not deal with sensitive aspects of individuals' behavior.

References

1. Zedlewski S, Brauner S. Are the Steep Declines in Food Stamp Participation Linked to Falling Welfare Caseloads? Washington, DC: Urban Institute; 1999.

 Willis E, Malloy M, Kliegman RM. Welfare reform consequences for children: the Wisconsin experience. *Pediatrics.* 2000;106:83–94.

3. Oliveira V. Food assistance expanded, then contracted in the 1990's. Available at: http://www.ers. usda.gov. Accessed March 30, 2001.

 Briefing room: food and nutrition assistance programs. Available at: http://www.ers.usda.gov/briefing/ FoodNutritionAssistance/reform. Accessed May 21, 2001.

 Community Nutrition Institute. Fewer people receiving food stamp, WIC benefits. *Nutrition Week*. February 4, 2000:5.

 Jessop DJ, Finkelstein R, Rosenberg T, et al. The Impact of Recent Immigration Policy Changes on the Receipt of WIC Services: An Aggregate Analysis. New York, NY: Medical and Health Research Association; 1999.

7. Kotelchuck M, Schwartz JB, Anderka MT, Finison KS. WIC participation and pregnancy outcomes: Massachusetts statewide evaluation project. *Am J Public Health.* 1984;74:1086–1092.

8. Ahluwalia IB, Hogan VK, Grummer-Strawn, L, Colville WR, Peterson A. The effect of WIC participa-

tion on small-for-gestational-age births: Michigan, 1992. *Am J Public Health*. 1998;88:1374–1377.

9. Moss NE, Carver K. The effect of WIC and Medicaid on infant mortality in the United States. *Am J Public Health*. 1998;88:1354–1361.

10. Buescher PA, Horton SJ. Prenatal WIC Participation in Relation to Low Birth Weight and Medicaid Infant Costs in North Carolina–A 1997 Update. Raleigh, NC: Center for Health Information and Statistics; 2000.

11. *Statistical Report of Program Operations*. New York, NY: New York State Department of Health WIC Program; 2001.

 Hammad TA, Havas S, Damron D, Langenberg P. Withdrawal rates for infants and children participating in WIC in Maryland. *J Am Diet Assoc.* 1997;97: 893–895.

13. Damron D, Langenberg P, Anliker J, Ballesteros M, Feldman R, Havas S. Factors associated with attendance in a voluntary nutrition education program. *Am J Health Promotion.* 1999;13:268–275.

14. Woelfel ML, Popp AM, DeMeo S, Kellis D. Barriers to Retention Among Infants and Children in the NYS WIC Program. New York, NY: Division of Nutrition, Evaluation and Analysis Unit, New York State Department of Health; 2000.

15. SPSS for Windows, Release 9.0.0. Chicago, Ill: SPSS Inc; 1998.

 Macro International Inc. *Final Report—WIC Dynamics*. Vol. 1. Washington, DC: US Dept of Agriculture, Food and Consumer Services; 1995.

17. Brotman BA, Bumgarner M, Prime P. Client flow through the Women, Infants, and Children Public Health Program. *J Health Care Finance*. 1998;25: 72–77.

 National Cancer Institute Cancer Screening Consortium for Underserved Women. Breast and cervical cancer screening among underserved women: baseline survey results from six states. *Arch Fam Med.* 1995;4: 617–624.

19. Rosenbach ML, Irvin C, Coulam RF. Access for low-income children: is health insurance enough? *Pediatrics*. 1999;103:1167–1174.

20. WIC participant and program characteristics 1998: executive summary. Available at: http://www. fns.usda.gov/oane/MENU/Published/WIC/FILES/ PC98sum.htm. Accessed May 30, 2001.

 WIC program: total participation (data as of April 27, 2001). Available at: http://www.fns.usda.gov/pd/ wifypart.htm. Accessed May 18, 2001.

22. Hisamoto E. Concern over the issue of WIC participant reenrollment [letter]. *J Am Diet Assoc.* 1998; 98:632.

23. Frequently asked questions about electronic benefit transfer (EBT) system. Available at: http://www.fns. usda.gov/fsp/MENU/ADMIN/EBT/faq/faq.htm. Accessed July 10, 2001.



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