



The Impact of Positive Psychology on Diabetes Outcomes: A Review

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ABSTRACT

Background: Due to the intensive treatment requirements needed to maintain diabetes control, optimal diabetes outcomes can be difficult to achieve for individuals with type 1 or type 2 diabetes from childhood through adulthood. While risk factors related to individual differences in outcomes have been studied in depth, there is a growing body of research that has revealed the effects of positive personal and environmental characteristics on diabetes management and glycemic control. The goal of this review is to summarize the existent literature on the role of positive characteristics in diabetes outcomes. **Method:** Extensive literature searches were conducted using Medline, PsychInfo, and CINAHL to identify studies assessing positive personal and environmental characteristics and diabetes outcomes. Included articles were published between 1989 and 2012. **Results:** Across the lifespan, positive personal characteristics such as self-efficacy, self-esteem, and adaptive coping were associated with diabetes management and glycemic control. Positive environmental factors such as parental monitoring and support were also important predictors of good outcomes, particularly for adolescents. **Conclusions:** Positive personal and environmental factors have been shown to be associated with diabetes outcomes and should be addressed in efforts to improve outcomes at all life stages. Clinical research and practice may be enhanced through efforts to evaluate and promote positive personal and environmental factors with the ultimate goal of reducing barriers to optimal diabetes management and control.

KEYWORDS

Positive Psychology; Diabetes

Cite this paper

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References

- [1] Ahola, A. J., Saraheimo, M., Forsblom, C., Hietala, K., Groop, P. H., & Group, F. S. (in press). The cross-sectional associations between sense of coherence and diabetic microvascular complications, glycaemic control, and patients' conceptions of type 1 diabetes. *Health and Quality of Life Outcomes*, 8, 142.
- [2] American Diabetes Association. (2011). Standards of medical care in diabetes—2011. *Diabetes Care*, 34, S11-S61. doi: 10.2337/dc11-S011
- [3] Anderson, B., Ho, J., Brackett, J., Finkelstein, D., & Laffel, L. (1997). Parental involvement in diabetes management tasks: Relationships to blood glucose monitoring adherence and metabolic control in young adolescents with insulin-dependent diabetes mellitus. *Journal of Pediatrics*, 130, 257-265. doi: 10.1016/S0022-3476(97)70352-4
- [4] Anderson, B. J., Brackett, J., Ho, J., & Laffel, L. M. (1999). An office based intervention to maintain parent-adolescent teamwork in diabetes management. Impact on parent involvement, family conflict, and subsequent glycemic control. *Diabetes Care*, 22, 713-721. doi: 10.2337/diacare.22.5.713
- [5] Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: WH Freeman Co.
- [6] Bazzazian, S., & Besharat, M. A. (2012). An explanatory model of adjustment to type I diabetes based on attachment, coping, and self-regulation theories. *Psychology, Health & Medicine*, 17, 47-58.

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- [7] Berg, C. A., Butler, J. M., Osborn, P., King, G., Palmer, D. L., Butner, J. et al. (2008). Role of parental monitoring in understanding the benefits of parental acceptance on adolescent adherence and metabolic control of type 1 diabetes. *Diabetes Care*, 31, 678-683. doi:10.2337/dc07-1678
- [8] Berg, C. A., King, P. S., Butler, J. M., Pham, P., Palmer, D., & Wiebe, D. J. (2011). Parental involvement and adolescents' diabetes management: The mediating role of self-efficacy and externalizing and internalizing behaviors. *Journal of Pediatric Psychology*, 36, 329-339. doi:10.1093/jpepsy/jsq088
- [9] Brody, G. H., Kogan, S. M., Murry, V. M., Chen, Y. F., & Brown, A. C. (2008). Psychological functioning, support for self-management, and glycemic control among rural African American adults with diabetes mellitus type 2. *Health Psychology*, 27, S83-S90. doi:10.1037/0278-6133.27.1.S83
- [10] Butler, D. A., Zuehlke, J. B., Tovar, A., Volkening, L. K., Anderson, B. J., & Laffel, L. M. (2008). The impact of modifiable family factors on glycemic control among youth with type 1 diabetes. *Pediatric Diabetes*, 9, 373-381. doi:10.1111/j.1399-5448.2008.00370.x
- [11] Centers for Disease Control and Prevention (2011). National Diabetes Fact Sheet: National estimates and general information on diabetes and prediabetes in the United States. Atlanta, GA: Centers for Disease Control and Prevention.
- [12] Cherrington, A., Ayala, G. X., Amick, H., Scarinci, I., Allison, J., & Corbie-Smith, G. (2008). Applying the community health worker model to diabetes management: Using mixed methods to assess implementation and effectiveness. *Journal of Health Care for the Poor and Underserved*, 19, 1044-1059. doi:10.1353/hpu.0.0077
- [13] Chih, A. H., Jan, C. F., Shu, S. G., & Lue, B. H. (2010). Self-efficacy affects blood sugar control among adolescents with type 1 diabetes mellitus. *Journal of the Formosan Medical Association*, 109, 503-510. doi:10.1016/S0929-6646(10)60084-8
- [14] Christie, D., & Barnard, K. D. (2012). Supporting resilience and positive outcomes in families, children, and adolescents. In K. D. Barnard, & C. E. Lloyd (Eds.), *Psychology and diabetes care* (pp. 47-68). London: Springer. doi:10.1007/978-0-85729-573-6_3
- [15] Cohen, D. M., Lumley, M. A., Naar-King, S., Partridge, T., & Cakan, N. (2004). Child behavior problems and family functioning as predictors of adherence and glycemic control in economically disadvantaged children with type 1 diabetes: A prospective study. *Journal of Pediatric Psychology*, 29, 171-184. doi:10.1093/jpepsy/jsh019
- [16] Cohen, M., & Kanter, Y. (2004). Relation between sense of coherence and glycemic control in type 1 and type 2 diabetes. *Behavioral Medicine*, 29, 175-183. doi:10.3200/BMED.29.4.175-185
- [17] Dale, J. R., Williams, S. M., & Bowyer, V. (in press). What is the effect of peer support on diabetes outcomes in adults? A systematic review. *Diabetic Medicine*, 29, 1361-1377.
- [18] De Ridder, D., Fournier, M., & Bensing, J. (2004). Does optimism affect symptom report in chronic disease? What are its consequences for self-care behaviour and physical functioning? *Journal of Psychosomatic Research*, 56, 341-350. doi:10.1016/S0022-3999(03)00034-5
- [19] DeNisco, S. (2011). Exploring the relationship between resilience and diabetes outcomes in African Americans. *Journal of the American Academy of Nurse Practitioners*, 23, 602-610. doi:10.1111/j.1745-7599.2011.00648.x
- [20] Diabetes Control and Complications Trial Research Group (1993). The effect of intensive treatment of diabetes on the development and progression of long-term complications in insulin-dependent diabetes mellitus. *New England Journal of Medicine*, 329, 977-986. doi:10.1056/NEJM199309303291401
- [21] DIAMOND Project Group (2006). Incidence and trends of childhood Type 1 diabetes worldwide 1990-1999. *Diabetic Medicine*, 23, 857-866. doi:10.1111/j.1464-5491.2006.01925.x
- [22] Ellis, D. A., Podolski, C. L., Frey, M., Naar-King, S., Wang, B., & Moltz, K. (2007). The role of parental monitoring in adolescent health outcomes: impact on regimen adherence in youth with type 1 diabetes. *Journal of Pediatric Psychology*, 32, 907-917. doi:10.1093/jpepsy/jsm009
- [23] Fox, C. S., Pencina, M. J., Meigs, J. B., Vasan, R. S., Levitzky, Y. S., & D' Agostino, R. B. (2006). Trends in the incidence of type 2 diabetes mellitus from the 1970s to the 1990s: The Framingham Heart Study. *Circulation*, 113, 2914-2918. doi:10.1161/CIRCULATIONAHA.106.613828

- [24] Fry, P. S., & Debats, D. L. (2011). Perfectionism and other related trait measures as predictors of mortality in diabetic older adults: A six-and-a-half-year longitudinal study. *Journal of Health Psychology*, 16, 1058-1070. doi:10.1177/1359105311398684
- [25] George, J. T., Valdovinos, A. P., Russell, I., Dromgoole, P., Lomax, S., Torgerson, D. J., et al. (2008). Clinical effectiveness of a brief educational intervention in Type 1 diabetes: Results from the BITES (Brief Intervention in Type 1 diabetes, Education for Self-efficacy) trial. *Diabetic Medicine*, 25, 1447-1453. doi:10.1111/j.1464-5491.2008.02607.x
- [26] Giles, D. E., Strowig, S. M., Challis, P., & Raskin, P. (1992). Personality traits as predictors of good diabetic control. *Journal of Diabetes and Its Complications*, 6, 101-104. doi:10.1016/1056-8727(92)90019-H
- [27] Grey, M., Boland, E. A., Davidson, M., Li, J., & Tamborlane, W. V. (2000). Coping skills training for youth with diabetes mellitus has long-lasting effects on metabolic control and quality of life. *Journal of Pediatrics*, 137, 107-113. doi:10.1067/mpd.2000.106568
- [28] Grey, M., Jaser, S. S., Whittemore, R., Jeon, S., & Lindemann, E. (2011). Coping skills training for parents of children with type 1 diabetes: 12 month outcomes. *Nursing Research*, 60, 173-181. doi:10.1097/NNR.0b013e3182159c8f
- [29] Hanson, C. L., Henggeler, S. W., Harris, M. A., Burghen, G. A., & Moore, M. (1989). Family system variables and the health status of adolescents with insulin-dependent diabetes mellitus. *Health Psychology*, 8, 239-253. doi:10.1037/0278-6133.8.2.239
- [30] Hartemann-Heurtier, A., Sultan, S., Sachon, C., Bosquet, F., & Grimaldi, A. (2001). How type 1 diabetic patients with good or poor glycemic control cope with diabetes-related stress. *Diabetic Medicine*, 18, 553-559.
- [31] Hauser, S. T., Jacobson, A. M., Lavori, P., Wolfsdorf, J. I., Herskowitz, R. D., Milley, J. E. et al. (1990). Adherence among children and adolescents with insulin-dependent diabetes mellitus over a four-year longitudinal follow-up: II. Immediate and long-term linkages with the family milieu. *Journal of Pediatric Psychology*, 15, 527-542. doi:10.1093/jpepsy/15.4.527
- [32] Helgeson, V. S., & Palladino, D. K. (2012). Agentic and communal traits and health: Adolescents with and without diabetes. *Peer & Social Psychology Bulletin*, 38, 415-428. doi:10.1177/0146167211427149
- [33] Helgeson, V. S., Reynolds, K. A., Siminerio, L., Escobar, O., & Becker, D. (2008). Parent and adolescent distribution of responsibility for diabetes self-care: Links to health outcomes. *Journal of Pediatric Psychology*, 33, 497-508. doi:10.1093/jpepsy/jsm081
- [34] Herge, W. M., Streisand, R., Chen, R., Homes, C., Kumar, A., & Mackey, E. (2012). Family and youth factors associated with health beliefs and health outcomes in youth with type 1 diabetes. *Journal of Pediatric Psychology*, 37, 980-989. doi:10.1093/jpepsy/jss067
- [35] Hilliard, M. E., Harris, M. A., & Weissberg-Benchell, J. (2012). Diabetes resilience: A model of risk and protection in Type 1 Diabetes. *Current Diabetes Reports*, 12, 739-748. doi:10.1007/s11892-012-0314-3
- [36] Hood, K. K., Peterson, C., Rohan, J., & Drotar, D. (2009). Association between adherence and glycemic control in pediatric type 1 diabetes: A meta-analysis. *Pediatrics*, 124, e1171-e1179. doi:10.1542/peds.2009-0207
- [37] Horton, D., Berg, C. A., Butner, J., & Wiebe, D. J. (2009). The role of parental monitoring in metabolic control: Effect of adherence and externalizing behaviors during adolescence. *Journal of Pediatric Psychology*, 34, 1008-1018. doi:10.1093/jpepsy/jsp022
- [38] Hummer, K., Vannatta, J., & Thompson, D. (2011). Locus of control and metabolic control of diabetes: A meta-analysis. *The Diabetes Educator*, 37, 104-110. doi:10.1177/0145721710388425
- [39] Iannotti, R. J., Schneider, S., Nansel, T. R., Haynie, D. L., Plotnick, L. P., Clark, L. M. et al. (2006). Self-efficacy, outcome expectations, and diabetes self-management in adolescents with type 1 diabetes. *Journal of Developmental & Behavioral Pediatrics*, 27, 98-105. doi:10.1097/00004703-200604000-00003
- [40] Jacobson, A. M., Hauser, S. T., Lavori, P., Willett, J. B., Cole, C. F., Wolfsdorf, J. I. et al. (1994). Family environment and glycemic control: a four-year prospective study of children and adolescents with insulin-dependent diabetes mellitus. *Psychosomatic Medicine*, 56, 401-409.

- [41] Jaser, S. S., Faulkner, M. S., Whittemore, R., Jeon, S., Murphy, K., Delamater, A. et al. (2012). Coping, self-management, and adaptation in adolescents with type 1 diabetes. *Annals of Behavioral Medicine*, 43, 311-319. doi:10.1007/s12160-012-9343-z
- [42] Jaser, S. S., & White, L. E. (2011). Coping and resilience in adolescents with type 1 diabetes. *Child: Care, Health and Development*, 37, 335-342. doi:10.1111/j.1365-2214.2010.01184.x
- [43] Johnston-Brooks, C. H., Lewis, M. A., & Garg, S. (2002). Self-efficacy impacts self-care and HbA1c in young adults with Type I diabetes. *Psychosomatic Medicine*, 64, 43-51.
- [44] Kichler, J. C., Kaugars, A. S., Maglio, K., & Alemzadeh, R. (2012). Exploratory analysis of the relationships among different methods of assessing adherence and glycemic control in youth with type 1 diabetes mellitus. *Health Psychology*, 31, 35-42. doi:10.1037/a0024704
- [45] Knecht, M. C., Keinonen-Kiukaanniemi, S. M., Knuutila, M. L., & Syrjänen, A. M. (2001). Self-esteem as a characteristic of adherence to diabetes and dental self-care regimens. *Journal of Clinical Periodontology*, 28, 175-180. doi:10.1034/j.1600-051x.2001.028002175.x
- [46] La Greca, A. M., Swales, T., Klemp, S., Madigan, S., & Skyler, J. (1995). Adolescents with diabetes: Gender differences in psychosocial functioning and glycemic control. *Child Health Care*, 24, 61-78. doi:10.1207/s15326888chc2401_6
- [47] Laffel, L. M., Connell, A., Vangsness, L., Goebel-Fabbri, A., Mansfield, A., & Anderson, B. J. (2003). General quality of life in youth with type 1 diabetes: Relationship to patient management and diabetes-specific family conflict. *Diabetes Care*, 26, 3067-3073. doi:10.2337/diacare.26.11.3067
- [48] Laffel, L. M., Vangsness, L., Connell, A., Goebel-Fabbri, A., Butler, D., & Anderson, B. J. (2003). Impact of ambulatory, family-focused teamwork intervention on glycemic control in youth with type 1 diabetes. *Journal of Pediatrics*, 142, 409-416. doi:10.1067/mpd.2003.138
- [49] Lane, J. D., McCaskill, C. C., Williams, P. G., Parekh, P. I., Feinglos, M. N., & Surwit, R. S. (2000). Personality correlates of glycemic control in type 2 diabetes. *Diabetes Care*, 23, 1321-1325. doi:10.2337/diacare.23.9.1321
- [50] Lloyd, S. M., Cantell, M., Pacaud, D., Crawford, S., & Dewey, D. (2009). Brief report: Hope, perceived maternal empathy, medical regimen adherence, and glycemic control in adolescents with type 1 diabetes. *Journal of Pediatric Psychology*, 34, 1025-1029. doi:10.1093/jpepsy/jsn141
- [51] Lundman, B., & Norberg, A. (1993). The significance of a sense of coherence for subjective health in persons with insulin-dependent diabetes. *Journal of Advanced Nursing*, 18, 381-386. doi:10.1046/j.1365-2648.1993.18030381.x
- [52] Luyckx, K., Vanhalst, J., Seiffge-Krenke, I., & Weets, I. (2010). A typology of coping with Type 1 diabetes in emerging adulthood: associations with demographic, psychological, and clinical parameters. *Journal of Behavioral Medicine*, 33, 228-238. doi:10.1007/s10865-010-9249-9
- [53] Meevissen, Y. M., Peters, M. L., & Alberts, H. J. (2011). Become more optimistic by imagining a best possible self: Effects of a two week intervention. *J Behav Ther Exp Psychiatry*, 42, 371-378. doi:10.1016/j.jbtep.2011.02.012
- [54] Modi, A. C., Pai, A. L., Hommel, K. A., Hood, K. K., Cortina, S., Hilliard, M. E. et al. (2012). Pediatric self-management: A framework for research, practice, and policy. *Pediatrics*, 129, e473-485. doi:10.1542/peds.2011-1635
- [55] Monaghan, M., Horn, I. B., Alvarez, V., Cogen, F. R., & Streisand, R. (2012). Authoritative parenting, parenting stress, and self-care in pre-adolescents with type 1 diabetes. *J Clin Psychol Med Settings*, 19, 255-261. doi:10.1007/s10880-011-9284-x
- [56] Murray-Swank, A., Goldberg, R., Dickerson, F., Medoff, D., Wohlheiter, K., & Dixon, L. (2007). Correlates of religious service attendance and contact with religious leaders among persons with co-occurring serious mental illness and type 2 diabetes. *The Journal of Nervous and Mental Disease*, 195, 282-288.
- [57] Nakahara, R., Yoshiuchi, K., Kumano, H., Hara, Y., Suematsu, H., & Kuboki, T. (2006). Prospective study on influence of psychosocial factors on glycemic control in Japanese patients with type 2 diabetes. *Psychosomatics*, 47, 240-246. doi:10.1176/appi.psy.47.3.240
- [58] O'Hea, E. L., Moon, S., Grothe, K. B., Boudreaux, E., Bodenlos, J. S., Wallston, K., et al. (2009). The interaction of locus of control, self-efficacy, and outcome expectancy in relation to HbA1c in medically

underserved individuals with type 2 diabetes. *Journal of Behavioral Medicine*, 32, 106-117. doi:10.1007/s10865-008-9188-x

- [59] Palmer, D. L., Osborn, P., King, P. S., Berg, C. A., Butler, J., Butner, J., et al. (2011). The structure of parental involvement and relations to disease management for youth with type 1 diabetes. *Journal of Pediatric Psychology*, 36, 596-605. doi:10.1093/jpepsy/jsq019
- [60] Perfect, M. M., & Jaramillo, E. (2012). Relations between resiliency, diabetes-related quality of life, and disease markers to school-related outcomes in adolescents with diabetes. *School Psychology Quarterly*, 27, 29-40. doi:10.1037/a0027984
- [61] Petitti, D. B., Klingensmith, G. J., Bell, R. A., Andrews, J. S., Dabelea, D., Imperatore, G. et al. (2009). Glycemic control in youth with diabetes: The SEARCH for diabetes in Youth Study. *Journal of Pediatrics*, 155, 668-672. doi:10.1016/j.jpeds.2009.05.025
- [62] Polonsky, W. H. (1996). Understanding and treating patients with diabetes burnout. In B. J. Anderson, & R. R. Rubin (Eds.), *Practical psychology for diabetes clinicians* (pp. 183-191). Alexandria: ADA.
- [63] Richardson, A., Adner, N., & Nordström, G. (2001). Persons with insulin-dependent diabetes mellitus: Acceptance and coping ability. *Journal of Advanced Nursing*, 33, 758-763. doi:10.1046/j.1365-2648.2001.01717.x
- [64] Schneider, S., Iannotti, R. J., Nansel, T. R., Haynie, D. L., Sobel, D. O., & Simons-Morton, B. (2009). Assessment of an illness-specific dimension of self-esteem in youths with type 1 diabetes. *Journal of Pediatric Psychology*, 34, 283-293. doi:10.1093/jpepsy/jsn078
- [65] Seligman, M. E., & Csikszentmihalyi, M. (2000). Positive psychology. An introduction. *American Psychologist*, 55, 5-14. doi:10.1037/0003-066X.55.1.5
- [66] Silverstein, J., Klingensmith, G., Copeland, K., Plotnick, L., Kaufman, F., Laffel, L. et al. (2005). Care of children and adolescents with type 1 diabetes: A statement of the American Diabetes Association. *Diabetes Care*, 28, 186-212. doi:10.2337/diacare.28.1.186
- [67] Smalls, B. L., Walker, R. J., Hernandez-Tejada, M. A., Campbell, J. A., Davis, K. S., & Egede, L. E. (2012). Associations between coping, diabetes knowledge, medication adherence and self-care behaviors in adults with type 2 diabetes. *General Hospital Psychiatry*, 34, 385-389. doi:10.1016/j.genhospsych.2012.03.018
- [68] Van der Heijden, M. M., Pouwer, F., Romeijnders, A. C., & Pop, V. J. (2012). Testing the effectiveness of a self-efficacy based exercise intervention for inactive people with type 2 diabetes mellitus: Design of a controlled clinical trial. *BMC Public Health*, 12, 331. doi:10.1186/1471-2458-12-331
- [69] Venkataraman, K., Kannan, A. T., Kalra, O. P., Gambhir, J. K., Sharma, A. K., Sundaram, K. R. et al. (2012). Diabetes self-efficacy strongly influences actual control of diabetes in patients attending a tertiary hospital in India. *Journal of Community Health*, 37, 653-662. doi:10.1007/s10900-011-9496-x
- [70] Vollrath, M. E., Landolt, M. A., Gnehm, H. E., Laimbacher, J., & Sennhauser, F. H. (2007). Child and parental personality are associated with glycaemic control in Type 1 diabetes. *Diabetic Medicine*, 24, 1028-1033. doi:10.1111/j.1464-5491.2007.02215.x
- [71] Weinger, K., Butler, H. A., Welch, G. W., & La Greca, A. M. (2005). Measuring diabetes self-care: A psychometric analysis of the Self Care Inventory-revised with adults. *Diabetes Care*, 28, 1346-1352. doi:10.2337/diacare.28.6.1346
- [72] Wheeler, K., Wagaman, A., & McCord, D. (2012). Personality traits as predictors of adherence in adolescents with type 1 diabetes. *Journal of Child and Adolescent Psychiatric Nursing*, 25, 66-74. doi:10.1111/j.1744-6171.2012.00329.x
- [73] Wu, S. F., Lee, M. C., Liang, S. Y., Lu, Y. Y., Wang, T. J., & Tung, H. H. (2011). Effectiveness of a self-efficacy program for persons with diabetes: A randomized controlled trial. *Nursing & Health Sciences*, 13, 335-343.
- [74] Wysocki, T. (2002). Parents, teens, and diabetes. *Diabetes Spectrum*, 15, 6-8. doi:10.2337/diaspect.15.1.6
- [75] Wysocki, T., Harris, M. A., Buckloh, L. M., Mertlich, D., Lochrie, A. S., Mauras, N. et al. (2007). Randomized trial of behavioral family systems therapy for diabetes: Maintenance of effects on diabetes outcomes in adolescents. *Diabetes Care*, 30, 555-560. doi:10.2337/dc06-1613

- [76] Wysocki, T., Harris, M. A., Buckloh, L. M., Mertlich, D., Lochrie, A. S., Taylor, A. et al. (2008). Randomized, controlled trial of behavioral family systems therapy for diabetes: Maintenance and generalization of effects on parent-adolescent communication. *Behavior Therapy*, 39, 33-46. doi:10.1016/j.beth.2007.04.001
- [77] Wysocki, T., Lochrie, A., Antal, H., & Buckloh, L. M. (2011). Youth and parent knowledge and communication about major complications of type 1 diabetes: Associations with diabetes outcomes. *Diabetes Care*, 34, 1701-1705. doi:10.2337/dc11-0577
- [78] Wysocki, T., Nansel, T. R., Holmbeck, G. N., Chen, R., Laffel, L., Anderson, B. J. et al. (2009). Collaborative involvement of primary and secondary caregivers: Associations with youths' diabetes outcomes. *Journal of Pediatric Psychology*, 34, 869-881. doi:10.1093/jpepsy/jsn136
- [79] Yi-Frazier, J. P., Smith, R. E., Vitaliano, P. P., Yi, J. C., Mai, S., Hillman, M. et al. (2010). A person-focused analysis of resilience resources and coping in diabetes patients. *Stress and Health*, 26, 51-60. doi:10.1002/smj.1258
- [80] Yi, J. P., Vitaliano, P. P., Smith, R. E., Yi, J. C., & Weinger, K. (2008). The role of resilience on psychological adjustment and physical health in patients with diabetes. *British Journal of Health Psychology*, 13, 311-325. doi:10.1348/135910707X186994
- [81] Zulman, D. M., Rosland, A. M., Choi, H., Langa, K. M., & Heisler, M. (2012). The influence of diabetes psychosocial attributes and self management practices on change in diabetes status. *Patient Education and Counseling*, 87, 74-80. doi:10.1016/j.pec.2011.07.013